LEGEND

- Roadway or Auger Boring Location - Plan View.
- Press and/or Drive Sample and/or Core Boring Location - Plan View.
- TR — Top of Rock
- W — Indicates Free Water Elevation.
- Indicates Static Water Elevation.
- Horizontal Bar on Boring Log in the profile view indicates the Depth the Sample was taken
- X/Y/Z — Figures Beside the Boring Log in the Profile view Indicate the Number of Blows for Standard Penetration Test.
  - X = Number of Blows for First 6 in
  - Y = Number of Blows for Second 6 in
  - Z = Number of Blows for Third 6 in

SYMBOLS OF ROCK TYPES

Coal	Weathered Siltstone
Fire Clay or Underclay	Siltstone
Weathered Mudstone	Weathered Sandstone
Mudstone	Sandstone
Weathered Shale	Leached Dolomite
Shale	Dolomite
Weathered Clay-Shale	Leached Limestone
Clay-Shale	Limestone
	Boulders or Cobbles

GENERAL INFORMATION

Drive Sample/Press Sample/Core Borings

Drive sample borings are made by means of a mechanically-powered rotary-type drillrig employing a 2" O.D., 1-3/8" I.D. split spoon sampler, at 2.5 ft and/or 5.0 ft depth intervals, driven by means of a 140 lbs hammer with a free fall of 2.5 ft. The number of blows required to drive the sampler three 0.5 ft increments is considered the standard penetration test.

Drive/press sample borings are made by means of a mechanically-powered rotary-type drillrig, employing a 2 in O.D., 1⅜in I.D. split spoon sampler, and a 3 in O.D. thin wall press sampling tube. The press sampling tube is advanced by continuous uniform pressure, applied by the drillrig.

Core borings are made by means of a mechanically-powered rotary-type drillrig, employing an NW-PAM core barrel with an industrial diamond cutting head.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, type of sample, number of blows for the standard penetration test in three 0.15 m increments, sample description based on laboratory test results utilizing the Casagrande AC classification system, sample number; and gradation, plasticity and moisture content determinations. Results of strength and consolidation testing, if performed on undisturbed samples, will appear graphically on separate enclosures. Rock samples are displayed on the log sheets including depth and elevation of the sample, amount of recovery and a visual classification based on type, color, degree of hardness, grain size, deterioration, bedding, acid reaction and other qualifying factors.

At depths where materials are bouldery or gravelly to the extent that a sampler cannot be utilized, a wash sample is procured and visually classified, in order to determine the general characteristics of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	12"	Cobbles	3"	Gravel	2.0 mm (No. 10 sieve)	Coarse Sand	0.42 mm (No. 40 sieve)	Fine Sand	0.074 mm (No. 200 sieve)	Silt	0.005 mm	Clay

NOTE: ALL AVAILABLE SOIL AND BEDROCK INFORMATION THAT CAN BE CONVENIENTLY SHOWN ON THE STRUCTURE FOUNDATION INVESTIGATION SHEETS HAS BEEN SO REPORTED. ADDITIONAL SUBSURFACE INVESTIGATIONSMAY HAVE BEEN MADE TO STUDY SOME SPECIAL ASPECT OF THE PROJECT. COPIES OF THIS DATA, IF ANY MAY BE INSPECTED IN THE DISTRICT DEPUTY DIRECTOR'S OFFICE, THE OFFICE OF MATERIALS MANAGEMENT AT 1600 WEST BROAD STREET, THE PAVEMENT AND SOILS SECTION OF THE BUREAU OF LOCATION AND DESIGN OR IN THE BRIDGE BUREAU AT 25 SOUTHFRONT STREET.

OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF MATERIALS MANAGEMENT
1600 WEST BROAD ST. COLUMBUS, OH 43223

DATE 12/9/98 | REVIEWED M.R.S. | CHECKED J.B.H.

EMBANKMENT FAILURE INVESTIGATION

BRIDGE NO. WEST UNION ST. BRIDGE
OVER HOCKING RIVER AT SR.56 & SR.682

CITY OF ATHENS, OHIO

State of Ohio
Department of Transportation
Office of Materials Management

ENGLISH PROJECT

LOG OF BORING

Date Started 10/13/98 Sampler: Type SS Dia. 1⅜" Water Elev. 629.73' Project Identification: ATHENS
Date completed 10/14/98 WEST UNION STREET BRIDGE
Boring No. B-1 Station & Offset 631+57, 44' RT. Surface Elev. 639.73' SR 56 & SR 682 OV. HOCKING RIVER

Elev.	Depth	Std. Pen. (N)	Rec. ft	Loss ft	Description	Sample No.	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	ODOT Class
639.73	0														
637.23															
	4	4/5/5			BROWN SILT AND CLAY	15	0	1	19	43	37	33	11	22	A-6a
634.73															
		5/4/5			BROWN SANDY SILT	16	0	1	48	30	21	NP	NP	19	A-4a
632.23															
		3/1/1			BROWN SANDY SILT	17	0	2	51	28	19	NP	NP	20	A-4a
629.73	10														
	12	2/2/1			GRAY SANDY SILT	18	0	0	30	39	31	NP	NP	39	A-4a
627.23															
	14	1/1/1			GRAY SANDY SILT	19	0	0	38	34	28	NP	NP	40	A-4a
624.73															
		1/1/1			GRAY SANDY SILT	20	0	0	28	41	31	NP	NP	32	A-4a
622.23															
		1/1/1			GRAY SILTY CLAY	21	0	0	18	39	43	35	16	42	A-6b
619.73	20														
	22	2/3/5			GRAY SANDY SILT	22	0	1	54	22	23	NP	NP	31	A-4a
614.73															
		3/6/10			GRAY SANDY SILT	23	0	6	44	22	28	25	8	41	A-4a
609.73	30														
	32	13/19/19			GRAY GRAVELLY SAND	24	27	44	22	3	4	NP	NP	30	A-1-b
604.73															
		10/8/15			GRAY SANDY SILT (SAND HEAVED 4.0' IN AUGERS) TOP OF ROCK	25	0	6	31	38	25	NP	NP	22	A-4a
599.73	40														
599.23	42	32/41/70			GRAY SOFT CLAY-SHALE	26	-	-	-	-	-	-	-	9	VISUAL
594.73	46	75(0.5')			GRAY CLAY-SHALE WITH SLICKENSIDES	27	-	-	-	-	-	-	-	11	VISUAL
589.73 / 589.23	50	80(0.5')			GRAY FINE-GRAINED WEATHERED SANDSTONE	28	-	-	-	-	-	-	-	9	VISUAL
			5.0	0.0	SANDSTONE, GRAY, FIRM, MICACEOUS, WITH NUMEROUS CARBONACEOUS LAMINAE AND THIN BLACK SHALE SEAMS, FINE-GRAINED, THIN-BEDDED, JOINTED IN PLACES. NO CORE LOSS.										
581.03			5.0	0.0	COAL, BLACK, VITREOUS, JOINTED. NO CORE LOSS.										
580.23 / 579.83	60				(A)										
578.13	62				(B)										
	64		5.0	0.0	SANDSTONE, GRAY, FIRM, MICACEOUS, FINE-GRAINED, MEDIUN-BEDDED. NO CORE LOSS.										
574.23					BOTTOM OF BORING										

Particle Sizes: Agg= >2.00mm, Coarse Sand= 2.00-0.42mm, Fine Sand= 0.42-0.074mm, Silt= 0.074-0.005mm, Clay= <0.005mm

(A) WEATHERED SHALE, DARK OLIVE, SOFT, WITH THIN CLAY SEAMS, SLICKENSIDED, JOINTED. NO CORE LOSS

(B) SHALE, BLACK, FIRM, HIGHLY ARENACEOUS, WITH CONCRETIONS, WITH A THICK HIGHLY WEATHERED SEAM IN THE MIDDLE, JOINTED NEAR THE TOP, HIGHLY SLICKENSIDED; WITH A THICK GRAY FINE-GRAINED SANDSTONE SEAM AT THE TOP. NO CORE LOSS.

State of Ohio
Department of Transportation
Office of Materials Management

ENGLISH PROJECT

LOG OF BORING

Date Started 10/15/98 Sampler: Type SS Dia. 1⅜" Water Elev. 619.11' Project Identification: ATHENS
Date completed 10/20/98 WEST UNION STREET BRIDGE
Boring No. B-2 Station & Offset 631+67, 54' LT. Surface Elev. 639.11' SR 56 & SR 682 OV. HOCKING RIVER

Elev.	Depth	Std. Pen. (N)	Rec. ft	Loss ft	Description	Sample No.	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	ODOT Class
639.11	0														
636.61															
	4	6/7/9			BROWN AND GRAY SANDY SILT W/STONE FRAGS.	45	0	2	19	41	38	NP	NP	12	A-4a
634.11															
		7/6/6			BROWN AND GRAY SANDY SILT	46	0	0	26	43	31	NP	NP	20	A-4a
631.61															
		9/9/9			BROWN AND GRAY SANDY SILT	47	0	0	23	43	34	NP	NP	20	A-4a
629.11	10														
	12	1/1/2			BROWN AND GRAY SILT AND CLAY	48	0	0	10	39	51	36	13	30	A-6a
626.61															
	14	3/3/3			GRAY CLAYEY SILT	49	0	0	6	39	55	32	9	32	A-4a
624.11															
		1/1/2			GRAY CLAYEY SILT	50	0	0	13	42	45	29	10	36	A-4a
621.61															
		2/4/3			GRAY CLAYEY SILT	51	0	0	7	41	52	32	10	34	A-4a
619.11	20														
	22	1/1/1			GRAY CLAYEY SILT	52	0	0	14	36	50	29	9	38	A-4a
614.11															
		3/2/2			GRAY SANDY CLAY	53	0	1	40	26	33	33	16	41	A-6b
609.11	30														
	32	3/4/7			GRAY SILTY GRAVELLY SAND	54	30	14	25	18	13	NP	NP	24	A-2-4
604.11															
		6/8/13			GRAY SILTY SAND (SAND HEAVED 4.0' IN AUGERS)	55	0	1	88	4	7	NP	NP	26	A-3a
599.11	40														
	42	2/4/4			GRAY SANDY SILT TOP OF ROCK	56	0	1	21	44	34	26	8	22	A-4a
594.11	46	27/60			BLACK AND GRAY SOFT SLICKENSIDED CLAY-SHALE	57	-	-	-	-	-	-	-	10	VISUAL
589.11 / 588.61	50	100(0.5')			BLACK ARENACEOUS HIGHLY WEATHERED SHALE	58	-	-	-	-	-	-	-	4	VISUAL
585.01			5.0	0.0	SANDSTONE, GRAY, FIRM, MICACEOUS, BLACK AND ARGILLACEOUS IN PART, FINE-GRAINED, THIN-BEDDED, WITH CLAY SEAMS, JOINTED IN PART. NO CORE LOSS.										
			5.0	0.0	SHALE, BLACK, FIRM, CARBONACEOUS, SLIGHTLY ARENACEOUS, WITH SCATTERED CLAY SEAMS, COALY AND BROKEN AND JOINTED IN PART, SLICKENSIDED AT THE BOTTOM; INTERBEDDED WITH GRAY FIRM, MICACEOUS, FINE-GRAINED SANDSTONE INTERBEDS COMPRISING 33 % OF THE INTERVAL. NO CORE LOSS.										
576.91	60				*										
578.61					BOTTOM OF BORING										

Particle Sizes: Agg= >2.00mm, Coarse Sand= 2.00-0.42mm, Fine Sand= 0.42-0.074mm, Silt= 0.074-0.005mm, Clay= <0.005mm

* CLAY-SHALE, DARK OLIVE TO BLACK, MEDIUM-FIRM, CARBONACEOUS, SLICKENSIDED. NO CORE LOSS.

OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF MATERIALS MANAGEMENT
1600 WEST BROAD ST. COLUMBUS, OH 43223

DATE 12/9/98
REVIEWED M.R.S.
CHECKED J.B.H.
TYPED J.B.H.

EMBANKMENT FAILURE INVESTIGATION

BRIDGE NO. WEST UNION ST. BRIDGE
OVER HOCKING RIVER AT SR.56 & SR.682

CITY OF ATHENS, OHIO

State of Ohio
Department of Transportation
Office of Materials Management

ENGLISH PROJECT

LOG OF BORING

Date Started 10/13/98 Sampler: Type SS Dia. 1⅜" Water Elev. 629.73' Project Identification: ATHENS
Date completed 10/14/98 WEST UNION STREET BRIDGE
Boring No. B-1 Station & Offset 631+57, 44' RT. Surface Elev. 639.73' SR 56 & SR 682 OV. HOCKING RIVER

Elev.	Depth	Std. Pen. (N)	Rec. ft	Loss ft	Description	Sample No.	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	ODOT Class
639.73	0														
637.23	2														
	4	4/5/5			BROWN SILT AND CLAY	15	0	1	19	43	37	33	11	22	A-6a
634.73	6	5/4/5			BROWN SANDY SILT	16	0	1	48	30	21	NP	NP	19	A-4a
632.23	8	3/1/1			BROWN SANDY SILT	17	0	2	51	28	19	NP	NP	20	A-4a
629.73	10														
	12	2/2/1			GRAY SANDY SILT	18	0	0	30	39	31	NP	NP	39	A-4a
627.23	14	1/1/1			GRAY SANDY SILT	19	0	0	38	34	28	NP	NP	40	A-4a
624.73	16	1/1/1			GRAY SANDY SILT	20	0	0	28	41	31	NP	NP	32	A-4a
622.23	18	1/1/1			GRAY SILTY CLAY	21	0	0	18	39	43	35	16	42	A-6b
619.73	20														
	22	2/3/5			GRAY SANDY SILT	22	0	1	54	22	23	NP	NP	31	A-4a
	24														
614.73	26	3/6/10			GRAY SANDY SILT	23	0	6	44	22	28	25	8	41	A-4a
	28														
609.73	30														
	32	13/19/19			GRAY GRAVELLY SAND	24	27	44	22	3	4	NP	NP	30	A-1-b
	34														
604.73	36	10/8/15			GRAY SANDY SILT (SAND HEAVED 4.0' IN AUGERS)	25	0	6	31	38	25	NP	NP	22	A-4a
	38				TOP OF ROCK										
599.73	40														
599.23	42	32/41/70			GRAY SOFT CLAY-SHALE	26	-	-	-	-	-	-	-	9	VISUAL
	44														
594.73	46	75(0.5')			GRAY CLAY-SHALE WITH SLICKENSIDES	27	-	-	-	-	-	-	-	11	VISUAL
	48														
589.73 / 589.23	50	80(0.5')			GRAY FINE-GRAINED WEATHERED SANDSTONE	28	-	-	-	-	-	-	-	9	VISUAL
	52–56		5.0	0.0	SANDSTONE,GRAY,FIRM,MICACEOUS,WITH NUMEROUS CARBONACEOUS LAMINAE AND THIN BLACK SHALE SEAMS,FINE-GRAINED,THIN-BEDDED,JOINTED IN PLACES.NO CORE LOSS.										
581.03	58		5.0	0.0											
580.23	60				COAL,BLACK,VITREOUS,JOINTED.NO CORE LOSS.										
579.83					(A)										
578.13	62				(B)										
	64		5.0	0.0	SANDSTONE,GRAY,FIRM,MICACEOUS,FINE-GRAINED,MEDIUN-BEDDED.NO CORE LOSS.										
574.23					BOTTOM OF BORING										

Particle Sizes: Agg= >2.00mm, Coarse Sand= 2.00-0.42mm,Fine Sand= 0.42-0.074mm, Silt= 0.074-0.005mm, Clay= <0.005mm

Form TE-10 Revised 1/98

(A) WEATHERED SHALE,DARK OLIVE,SOFT,WITH THIN CLAY SEAMS,SLICKENSIDED,JOINTED.NO CORE LOSS

(B) SHALE,BLACK,FIRM,HIGHLY ARENACEOUS,WITH CONCRETIONS,WITH A THICK HIGHLY WEATHERED SEAM IN THE MIDDLE,JOINTED NEAR THE TOP,HIGHLY SLICKENSIDED;WITH A THICK GRAY FINE-GRAINED SANDSTONE SEAM AT THE TOP.NO CORE LOSS.

State of Ohio
Department of Transportation
Office of Materials Management

ENGLISH PROJECT

LOG OF BORING

Date Started 10/15/98 Sampler: Type SS Dia. 1 3/8 Water Elev. 619.11' Project Identification: ATHENS
Date completed 10/20/98 WEST UNION STREET BRIDGE
Boring No. B-2 Station & Offset 631+67, 54' LT. Surface Elev. 639.11' SR 56 & SR 682 OV. HOCKING RIVER

Elev.	Depth	Sta. Pen. (N)	Rec. ft	Loss ft	Description	Sample No.	Physical Characteristics % Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	ODOT Class
639.11	0														
636.61	2														
	4	6/7/9			BROWN AND GRAY SANDY SILT W/STONE FRAGS.	45	0	2	19	41	38	NP	NP	12	A-4a
634.11	6	7/6/6			BROWN AND GRAY SANDY SILT	46	0	0	26	43	31	NP	NP	20	A-4a
631.61	8	9/9/9			BROWN AND GRAY SANDY SILT	47	0	0	23	43	34	NP	NP	20	A-4a
629.11	10	1/1/2			BROWN AND GRAY SILT AND CLAY	48	0	0	10	39	51	36	13	30	A-6a
626.61	12	3/3/3			GRAY CLAYEY SILT	49	0	0	6	39	55	32	9	32	A-4a
624.11	14	1/1/2			GRAY CLAYEY SILT	50	0	0	13	42	45	29	10	36	A-4a
621.61	16	2/4/3			GRAY CLAYEY SILT	51	0	0	7	41	52	32	10	34	A-4a
619.11	18	1/1/1			GRAY CLAYEY SILT	52	0	0	14	36	50	29	9	38	A-4a
	20														
614.11	22	3/2/2			GRAY SANDY CLAY	53	0	1	40	26	33	33	16	41	A-6b
	24														
609.11	26	3/4/7			GRAY SILTY GRAVELLY SAND	54	30	14	25	18	13	NP	NP	24	A-2-4
	28														
604.11	30	6/8/13			GRAY SILTY SAND (SAND HEAVED 4.0' IN AUGERS)	55	0	1	88	4	7	NP	NP	26	A-3a
	32														
599.11	34	2/4/4			GRAY SANDY SILT	56	0	1	21	44	34	26	8	22	A-4a
	36				TOP OF ROCK										
594.11	38	27/60			BLACK AND GRAY SOFT SLICKENSIDED CLAY-SHALE	57	-	-	-	-	-	-	-	10	VISUAL
589.11	40	100(0.5')			BLACK ARENACEOUS HIGHLY WEATHERED SHALE	58	-	-	-	-	-	-	-	4	VISUAL
588.61	42														
	44														
	46														
	48														
	50														
	52		5.0	0.0	SANDSTONE, GRAY, FIRM, MICACEOUS, BLACK AND ARGILLACEOUS IN PART, FINE-GRAINED, THIN-BEDDED, WITH CLAY SEAMS, JOINTED IN PART. NO CORE LOSS.										
585.01	54														
	56		5.0	0.0	SHALE, BLACK, FIRM, CARBONACEOUS, SLIGHTLY ARENACEOUS, WITH SCATTERED CLAY SEAMS, COALY AND BROKEN AND JOINTED IN PART, SLICKENSIDED AT THE BOTTOM; INTERBEDDED WITH GRAY FIRM, MICACEOUS, FINE-GRAINED SANDSTONE INTERBEDS COMPRISING 33 % OF THE INTERVAL. NO CORE LOSS.										
	58														
576.91	60				*										
578.61					BOTTOM OF BORING										

Particle Sizes: Agg= >2.00mm, Coarse Sand= 2.00-0.42mm Fine Sand= 0.42-0.074mm, Silt= 0.074-0.005mm, Clay= <0.005mm

Form TE-15 Revised 5/95

* CLAY-SHALE, DARK OLIVE TO BLACK, MEDIUM-FIRM, CARBONACEOUS, SLICKENSIDED. NO CORE LOSS.

State of Ohio
Department of Transportation
Office of Materials Management

ENGLISH PROJECT

LOG OF BORING

Date Started 10/14/98 Sampler: Type SS Dia. 1 3/8" Water Elev. 622.91' Project Identification: ATHENS
Date completed 10/15/98 WEST UNION STREET BRIDGE
Boring No. B-3 Station & Offset 631+89, 26' LT. Surface Elev. 634.91' SR 56 & SR 682 OV. HOCKING RIVER

Elev.	Depth	Std. Pen. (N)	Rec. ft	Loss ft	Description	Sample No.	Physical Characteristics % Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	ODOT Class
634.91	0														
632.41	2														
629.91	4	5/5/5			BROWN AND GRAY SANDY GRAVELLY SILT	29	30	0	15	42	43	NP	NP	22	A-4a
627.41	6	3/2/2			BROWN SANDY CLAY	30	0	2	19	39	40	34	11	32	A-6a
625.91	8	1/1/2			BROWN SILT AND CLAY	31	0	1	16	42	41	34	11	33	A-6a
624.41	10	1/1/2			BROWN SANDY SILTY CLAY	32	-	-	-	-	-	-	-	34	VISUAL
622.91	12	1/1/1			GRAY SILT	33	0	0	14	38	48	26	5	31	A-4a
621.41	14	1/1/1			GRAY SILT	34	0	0	19	44	37	NP	NP	42	A-4a
619.91	16	1/2/3			GRAY CLAYEY SILT	35	0	0	15	43	42	27	8	28	A-4a
618.41	18	1/1/1			GRAY SANDY SILT	36	0	0	21	39	40	28	9	42	A-4a
614.91	20	1/1/1			GRAY CLAYEY SILT	37	0	0	14	41	45	31	10	28	A-4a
612.41	22	1/1/2			GRAY SILT	38	0	0	2	41	57	28	4	36	A-4a
609.91	24	1/2/4			GRAY SILT AND CLAY	39	0	3	12	31	54	32	11	36	A-6a
607.41	26	2/2/5			GRAYISH-BROWN SILTY SANDY GRAVEL	40	60	16	9	6	9	NP	NP	22	A-1-a
604.91	28	6/5/4			GRAY SILTY SANDY GRAVEL (SAND HEAVED 4.0' IN AUGERS)	41	49	29	12	5	5	NP	NP	21	A-1-b
	30														
	32	4/7/8			GRAY GRAVELLY SAND	42	31	32	30	3	4	NP	NP	20	A-1-b
599.91	34														
	36	9/20/26			GRAY FINE SAND	43	0	40	53	1	6	NP	NP	28	A-3
	38														
594.91	40				TOP OF ROCK										
	42	30/70			GRAY W/BROWN SOFT ARENACEOUS CLAY-SHALE	44	-	-	-	-	-	-	-	9	VISUAL
	44														
589.91	46				(SAND HEAVED 3.0' IN AUGERS AT 45.0' DEEP)										
	48		5.0	0.0	SANDSTONE,GRAY,DARK GRAY,FIRM,MICACEOUS,FINE-GRAINED,VERY FINE-GRAINED IN PLACES, THIN TO MEDIUM-BEDDED,JOINTED AT THE TOP,WITH A THICK BROKEN AND JOINTED SEAM IN THE UPPER PORTION;WITH BLACK CARBONACEOUS SHALE SEAMS IN THE LOWER PORTION.NO CORE LOSS.										
584.91	50														
	52		4.7	0.3	SANDSTONE,GRAY,FIRM,MICACEOUS,FINE-GRAINED,THIN-BEDDED,WITH THIN TO THICK CLAY SEAMS JOINTED IN PART; INTERBEDDED WITH BLACK,FIRM,CARBONACEOUS,ARENACEOUS,PARTIALLY BROKEN AND JOINTEDSHALE INTERBEDS COMPRISING 45-50 % OF THE INTERVAL AND WITH A THICK WEATHERED SHALE SEAM AT 50.4' DEEP.CORE LOSS 6%										
	54														
579.91					BOTTOM OF BORING										

Particle Sizes: Agg= >2.00mm, Coarse Sand= 2.00-0.42mm,Fine Sand= 0.42-0.074mm, Silt= 0.074-0.005mm, Clay= <0.005mm

Form TE-13.Revised 1/99

State of Ohio
Department of Transportation
Office of Materials Management

ENGLISH PROJECT

LOG OF BORING

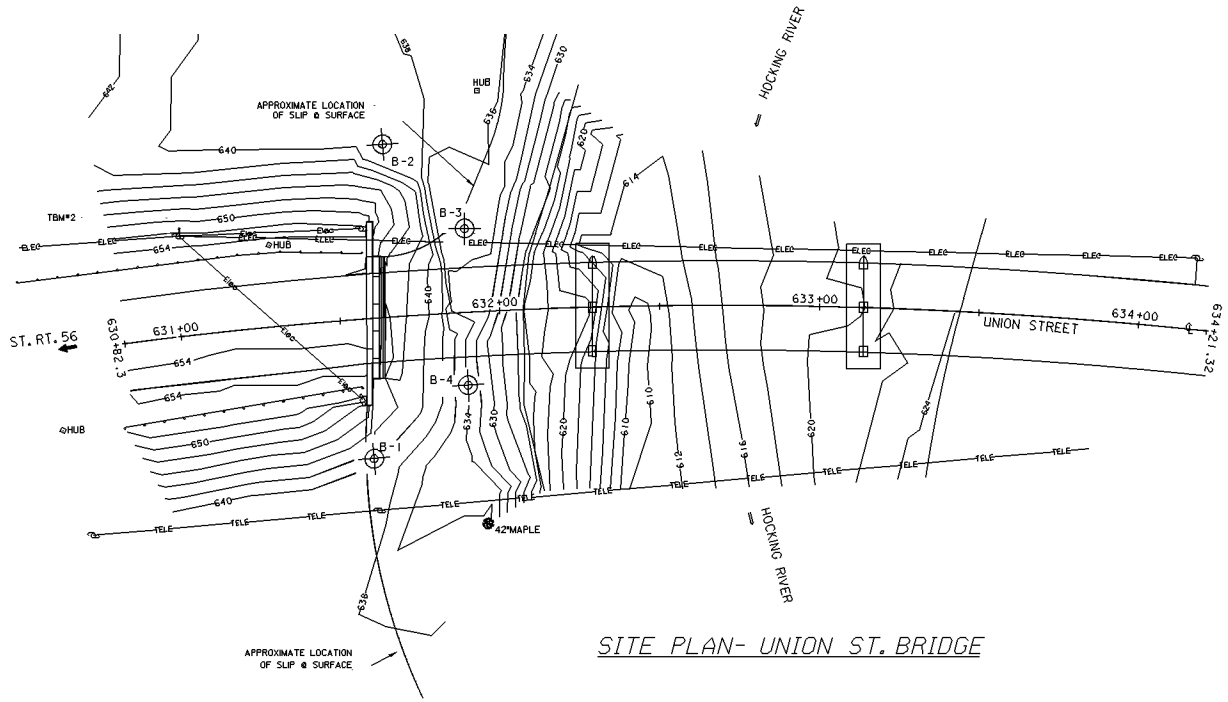
Date Started 10/13/98 Sampler: Type SS Dia. 1 3/8" Water Elev. 621.57' Project Identification: ATHENS
Date completed 10/13/98 WEST UNION STREET BRIDGE
Boring No. B-4 Station & Offset 631+89, 23' RT. Surface Elev. 633.57' SR 56 & SR 682 OV. HOCKING RIVER

Elev.	Depth	Std. Pen. (N)	Rec. ft	Loss ft	Description	Sample No.	Physical Characteristics % Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	ODOT Class
633.57	0														
	2	AUGERED			BROWN SANDY SILTY CLAY (FILL MATL.) (DRILLER'S DESCRIPTION)	-	-	-	-	-	-	-	-	-	VISUAL
628.57	4														
	6	1/2/2			BROWN AND GRAY SILT AND CLAY (FILL MATL.)	1	0	2	16	40	42	38	13	51	A-6a
626.07	8														
624.57		1/2/2			BROWN AND GRAY SANDY SILT	2	0	1	30	41	28	NP	NP	33	A-4a
	10														
623.07		1/1/2			GRAY SILT AND CLAY	3	0	1	16	39	44	31	11	38	A-6a
621.57	12	1/1/1			GRAY SANDY CLAY	4	0	1	22	36	41	31	11	32	A-6a
620.07	14	1/2/2			GRAY CLAYEY SILT	5	0	0	20	39	41	28	10	47	A-4a
618.57		1/1/1			GRAY SANDY SILT	6	0	0	28	39	33	NP	NP	35	A-4a
	16														
617.07		1/1/1			GRAY SILT AND CLAY	7	0	0	12	42	46	33	11	40	A-6a
	18	1/2/2			GRAY SILT AND CLAY	8	0	0	6	34	60	38	15	33	A-6a
613.57	20														
	22	1/1/2			GRAY SILT AND CLAY	9	0	0	3	37	60	35	11	38	A-6a
611.07															
	24	1/1/2			GRAY SILT AND CLAY	10	0	0	3	34	63	38	12	39	A-6a
608.57	26	1/3/4			GRAY SANDY GRAVEL	11	58	21	12	5	4	NP	NP	15	A-1-a
606.07	28														
		9/11/9			GRAY SILTY SANDY GRAVEL (SAND HEAVED 2.5' IN AUGER)	12	51	19	16	7	7	NP	NP	15	A-1-a
603.57	30														
	32	9/7/24			GRAY AND BROWN SANDY SILT W/STONE FRAGS.	13	-	-	-	-	-	-	-	12	VISUAL
600.57					TOP OF ROCK (DRILLER'S DESC.)										
600.07	34	65(0.5')			GRAY HIGHLY ARENACEOUS WEATHERED CLAY-SHALE	14	-	-	-	-	-	-	-	6	VISUAL
598.57															
	36		5.0	0.0	(A) SILTSTONE,BLACK,FIRM,WITH CLAY SEAMS,JOINTED.NO CORE LOSS.										
	38														
	40		5.0	0.0	SHALE,BLACK,FIRM,CARBONACEOUS,HIGHLY ARENACEOUS,MICACEOUS,WITH SCATTERED THIN CLAY SEAMS,JOINTED IN A FEW PLACES; INTERBEDDED WITH SCATTERED GRAY,HARD,FINE-GRAINED, JOINTED SANDSTONE INTERVALS RANGING UP TO 0.4' THICK.NO CORE LOSS.										
	42														
	44														
588.57					BOTTOM OF BORING										

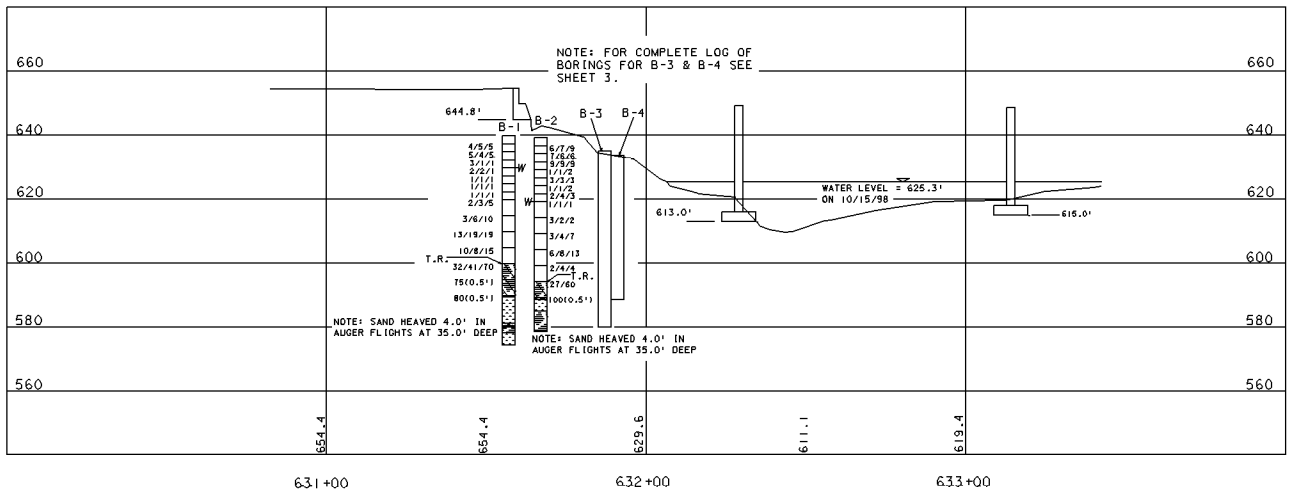
Particle Sizes: Agg= >2.00mm, Coarse Sand= 2.00-0.42mm, Fine Sand= 0.42-0.074mm, Silt= 0.074-0.005mm, Clay= <0.005mm

Form TE-49 Revised 1/95

(A) WEATHERED CLAY-SHALE,DARK OLIVE,SOFT,CARBONACEOUS,WITH THIN CLAY SEAMS,SLICKENSIDED, MOSTLY JOINTED; WITH A THICK GRAY,HARD,FINE-GRAINED SANDSTONE SEAM AT THE TOP.NO CORE LOSS.



SITE PLAN- UNION ST. BRIDGE



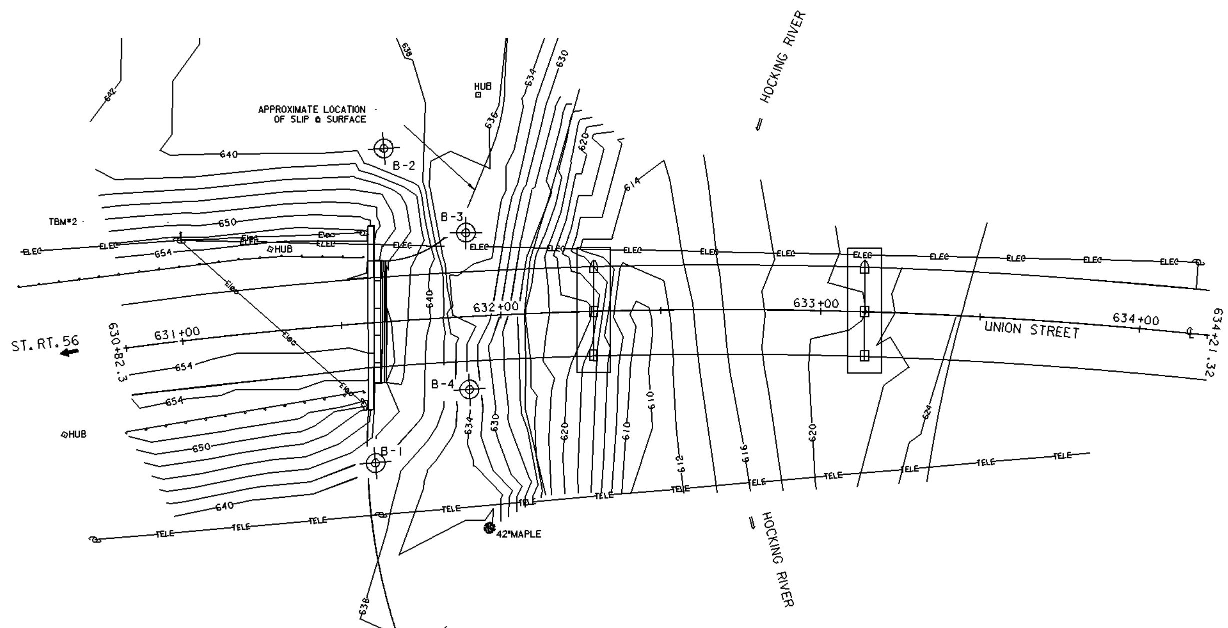
EMBANKMENT FAILURE INVESTIGATION
BRIDGE NO. WEST UNION ST. BRIDGE
OVER HOCKING RIVER AT SR.56 & SR.682

CITY OF ATHENS, OHIO

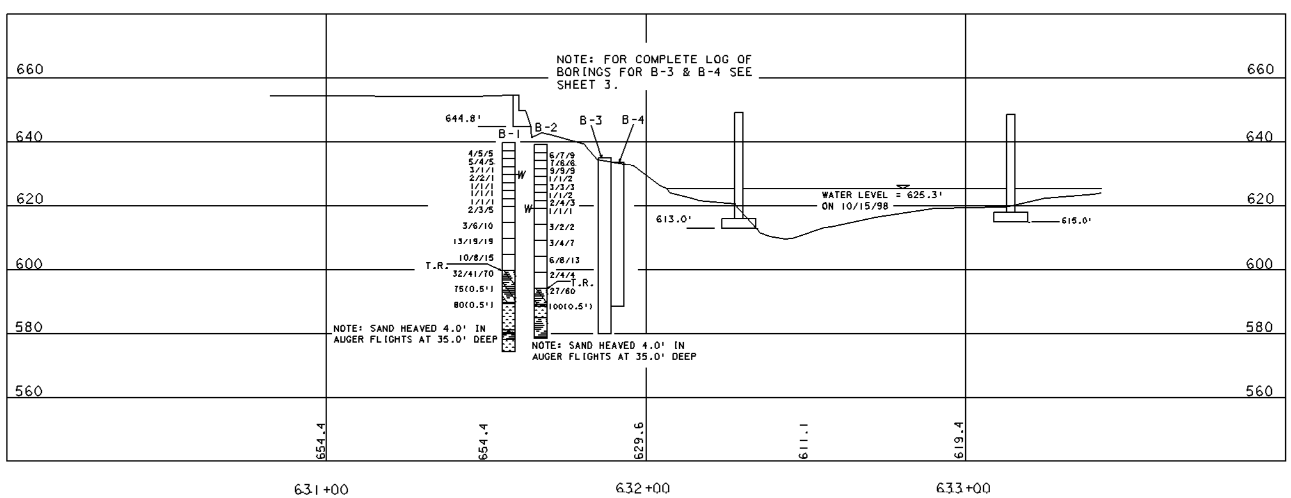
SCALE IN FEET

DRAWN J.B.H.
CHECKED J.B.H.
REVIEWED M.A.S.
DATE 8/29/98

2 / 5



SITE PLAN- UNION ST. BRIDGE



SCALE IN FEET 0 20 40

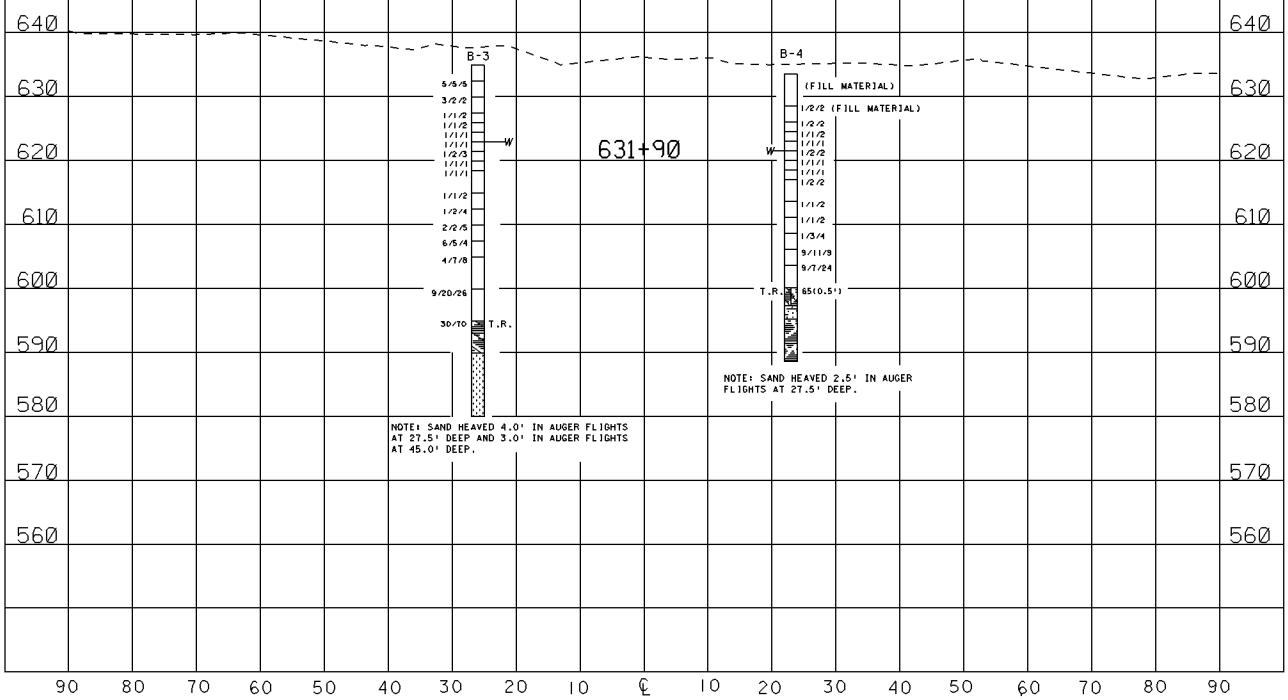
DATE 12/9/98
REVIEWED M.R.S.
CHECKED J.B.H.
DRAWN J.B.H.

EMBANKMENT FAILURE INVESTIGATION

BRIDGE NO. WEST UNION ST. BRIDGE
OVER HOCKING RIVER AT SR.56 & SR.682

CITY OF ATHENS, OHIO

CROSS SECTION



3/5	CITY OF ATHENS, OHIO	**EMBANKMENT FAILURE INVESTIGATION** *BRIDGE NO.* WEST UNION ST. BRIDGE *OVER* HOCKING RIVER AT SR.56 & SR.682		CHECKED J.B.H.	REVIEWED M.R.S.	DATE 12/9/98	OHIO DEPARTMENT OF TRANSPORTATION OFFICE OF MATERIALS MANAGEMENT 1600 WEST BROAD ST. COLUMBUS, OH 43223

1998 Year 015892 Job No. 132345 County ATHENS

Bridge No WEST UNION ST. BRIDGE OV. HOCKING RIVER

Section EMB. FAIL. INV

Over Under

Location RT SR 564 SR 682

STORAGE DATA	
Folder	
Section File No.	
Record Center No.	
Tracings	
Section File No.	
Record Center No.	

Project Code 0211

Topo Sheet 433-5-SW & SE

	Rev.
Drafting By	
Comp. Date	
Drafting Hrs.	

No. of Tracings 5

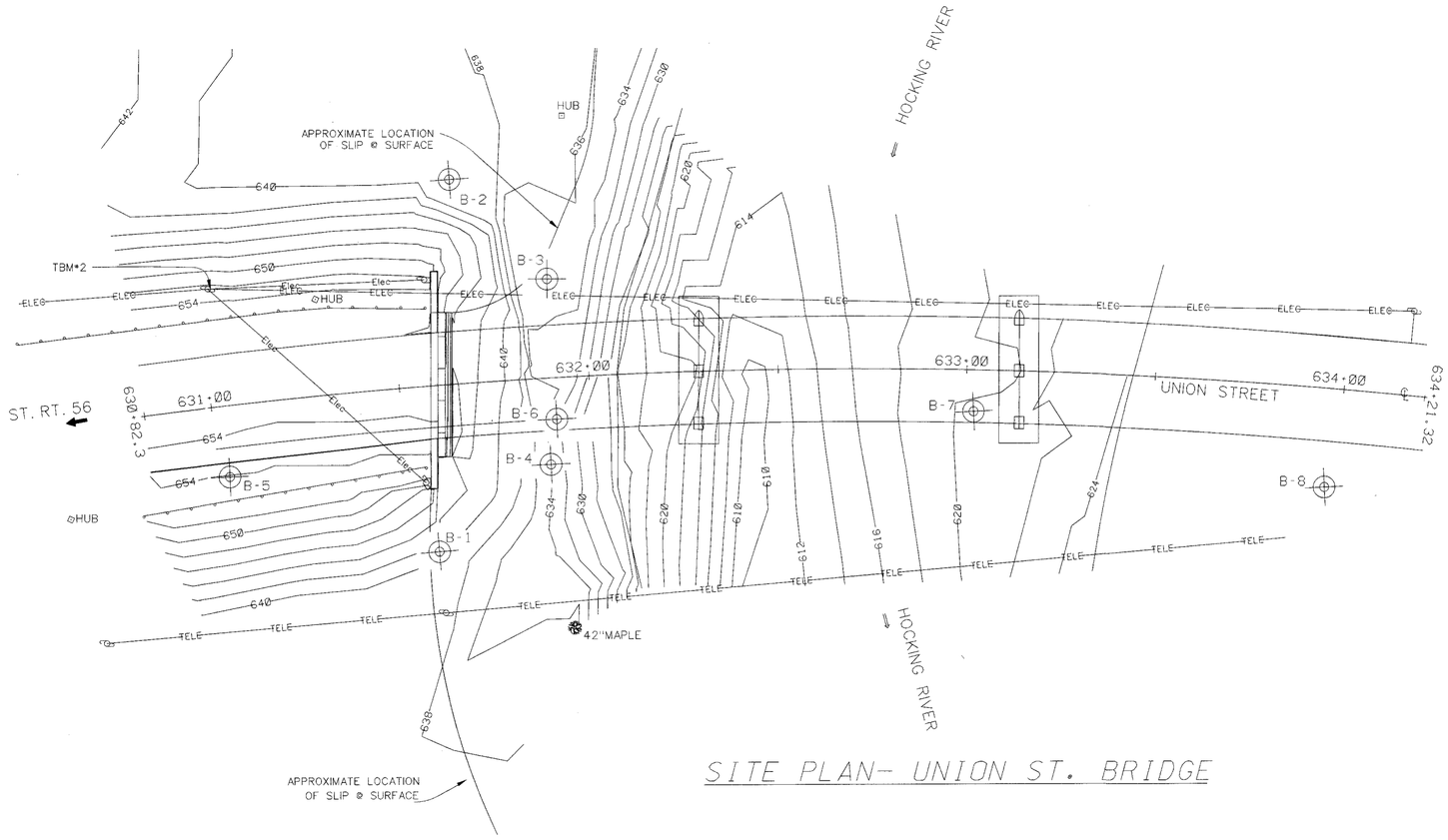
Remarks

	RECON	AUGER	CORE	UNDIST.
By			M.S.	
Date			10/13-20/98	
No. of Holes or Tubes			4	
Footage/Meter			226.0'	
Sample Tested			58	

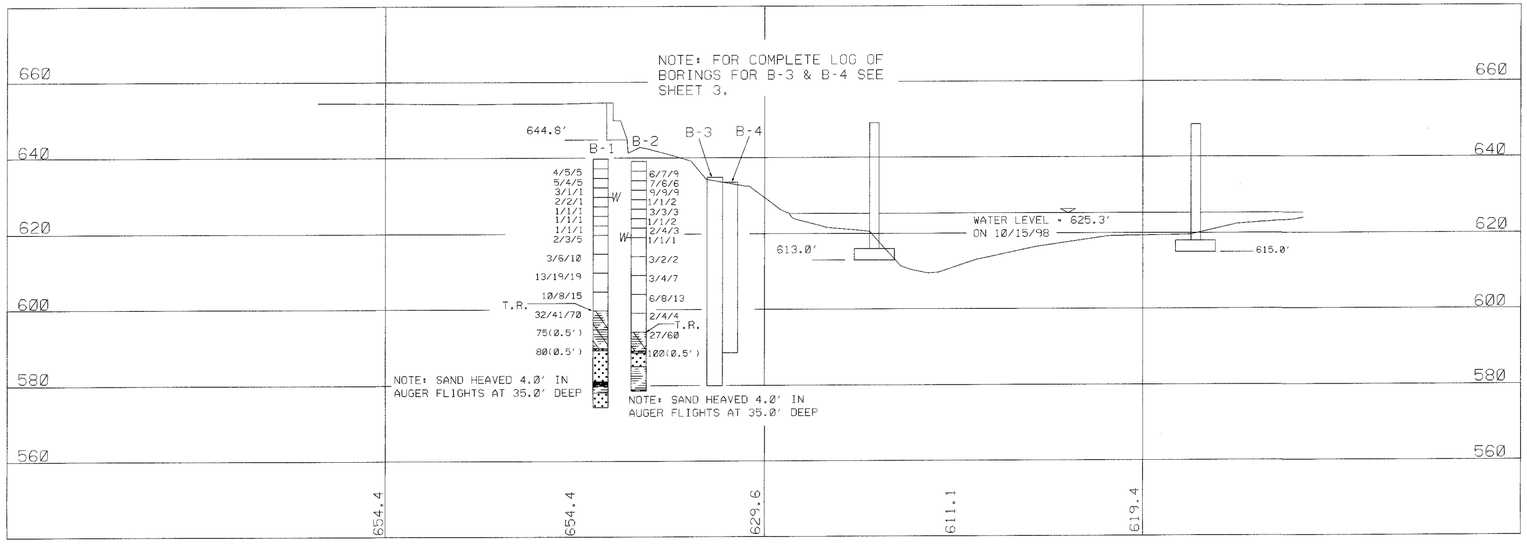
Transmittal Date 12/9/98 Revisions Refer to

Auger Data			Core Data			Undist. Data	
No of Holes	Meter or Footage	Samples	No. of Holes	Meter or Footage	Samples	No of Tubes	Samples
			4	226.0'	58		

Form TE-156 REVISED 7/95



SITE PLAN- UNION ST. BRIDGE



EMBANKMENT FAILURE INVESTIGATION
BRIDGE NO. WEST UNION ST. BRIDGE
OVER HOCKING RIVER AT SR. 56 & SR. 682

CITY OF ATHENS, OHIO

SCALE IN FEET
0 20 40

	DRAWN	CHECKED	REVIEWED	DATE
	J.B.H.	J.B.H.	M.R.S.	12/9/98

2 / 5

SOIL PROFILE

ATH-56-120
PROPOSED BRIDGE REPLACEMENT
ATH-56-120 OVER HOCKING RIVER
ATHENS COUNTY, OHIO

H.C. NUTTING COMPANY
GEOTECHNICAL ENGINEERS
COLUMBUS, OHIO 43230

1
3

LOG OF TEST BORING

CLIENT: Burgess & Niple, Limited
PROJECT: ATH-56-120 Over Hocking River
BORING LOCATION: Station 631+03, 19 Ft. Right
ELEVATION REFERENCE: Provided by Burgess & Niple, Limited

BORING NO.: B-5
DATE STARTED: 1/19/99
DATE COMPLETED: 1/20/99
WORK ORDER NO.: 60020.090

ELEV. (feet)	DEPTH (feet)	DESCRIPTION OF MATERIALS	SAMPLE NO.	TYPE	DEPTH (feet)	BLOW PER 6 INCHES	RECOVERY (inches)	SOIL PROPERTIES W (%)	LL/PL	PP *
653.8	0.0							-		
		0.4' Concrete Layer								
653.4	0.4									
		5.1' Brown coarse and fine sand, trace gravel, moist to wet – loose to very loose. (FILL)	1	SS	.04-1.9	3-3-3	12			
			2	SS	2.5-4.0	2-1-2	4			
			3	SS	5.0-5.5	-1-	6			
648.3	5.5									
		2.0' Brown silty clay, some weathered shale fragments and gravel, moist – stiff. (FILL)	3A	SS	5.5-6.5	4-9	12	9		
646.3	7.5									
		10.0' Mottled yellowish brown and gray SILT and CLAY, some to little sand, trace sandstone fragments, moist – stiff.	4	SS	7.5-9.0	9-4-7	10	11		
			5	SS	10.0-11.5	4-6-7	14	25		
			6	SS	12.5-14.0	4-5-7	18	21		4.0
			7	SS	15.0-16.5	3-3-6	18	22		4.5+
636.3	17.5									
		7.5' Mottled brown and gray SILTY CLAY, trace wood fragments, moist – medium stiff to very soft.	8	SS	17.5-19.0	3-3-5	18	24		3.5
			9	SS	20.0-21.5	2-3-5	18	30	39/22	
628.8	25.0									
		10.0' Mottled brown and gray SILT and CLAY, trace wood fragments, moist – medium stiff to very soft.	10	SS	25.0-26.5	1-3-3	18	32		0.75
			11	SS	30.0-31.5	1/12"-3	0			
618.8	35.0	5.0' Mottled brown and gray SILT, trace sand, moist – stiff.	12	SS	35.0-36.5	3-4-6	18	25	27/21	
613.8	40.0									
		1.0' Mottled gray and brown SILT and CLAY with shale and sandstone fragments, moist – very stiff.	13	SS	40.0-41.0	9-13	12	18		
612.8	41.0									
		5.0' Brown coarse and fine SAND, wet – medium dense.	13A	SS	41.0-41.5	-11-	6			
			14	SS	45.0-46.0	5-8	12			
607.8	46.0									
		4.0' Brown SANDY SILT, some rock and shale fragments, moist – stiff.	14A	SS	46.0-46.5	-11-	6			
603.8	50.0									
		3.5' Mottled gray and brown SILTY CLAY, little seams, moist – very stiff.	15	SS	50.0-51.5	5-8-10	18	22		
	53.5	(Continued)								

* Pocket Penetrometer Reading – Unconfined Compressive Strength, Tons/Sq. Ft.

GENERAL NOTES

Driller: D. Maxwell
Rig No.: 42
Rig Type: Truck M-57
Method: HSA, SS, NXR
Sampling:
Remarks:

H. C. NUTTING COMPANY
GEOTECHNICAL, ENVIRONMENTAL AND TESTING ENGINEERS SINCE 1921
GAHANNA COMMERCE CENTER 790 MORRISON ROAD COLUMBUS, OHIO 43230-6642

WATER LEVEL OBSERVATIONS

Immediate: 25.0 Ft.
At Completion: 24.5 Ft.
After 24 Hours: Ft.
Water Used in Drilling: 45.0
Remarks:

LOG OF TEST BORING

CLIENT: Burgess & Niple, Limited
PROJECT: ATH-56-120 Over Hocking River
BORING LOCATION: Station 631+03, 19 Ft. Right
ELEVATION REFERENCE: Provided by Burgess & Niple, Limited

BORING NO.: B-5
DATE STARTED: 1/19/99
DATE COMPLETED: 1/20/99
WORK ORDER NO.: 60020.090

ELEV. (feet)	DEPTH (feet)	DESCRIPTION OF MATERIALS	SAMPLE NO.	TYPE	DEPTH (feet)	BLOW PER 6 INCHES	RECOVERY (inches)	SOIL PROPERTIES W (%)	LL/PL	PP *
600.3	53.5									
		6.5' Gray SHALE, completely to moderately weathered, soft to medium hard.	16	SS	55.0-55.4	100/5"	4			
						NX ROCK CORE				
						RUN (inches)	RECOVERY (%)	ROD (%)		
593.8	60.0									
		5.0' Gray SANDSTONE, fresh to slightly weathered medium fractured with shale layers, hard.	C1	NX	60.0-65.0	60	87	60		
588.8	65.0									
		BORING COMPLETED								

* Pocket Penetrometer Reading – Unconfined Compressive Strength, Tons/Sq. Ft.

GENERAL NOTES

Driller: D. Maxwell
Rig No.: 42
Rig Type: Truck M-57
Method: HSA, SS, NXR
Sampling:
Remarks:

H. C. NUTTING COMPANY
GEOTECHNICAL, ENVIRONMENTAL AND TESTING ENGINEERS SINCE 1921
GAHANNA COMMERCE CENTER 790 MORRISON ROAD COLUMBUS, OHIO 43230-6642

WATER LEVEL OBSERVATIONS

Immediate: 25.0 Ft.
At Completion: 24.5 Ft.
After 24 Hours: Ft.
Water Used in Drilling: 45.0
Remarks:

LOG OF TEST BORING

CLIENT: Burgess & Niple, Limited
PROJECT: ATH-56-120 Over Hocking River
BORING LOCATION: Station 631+91, 11 Ft. Right
ELEVATION REFERENCE: Provided by Burgess & Niple, Limited

BORING NO.: B-6
DATE STARTED: 1/20/99
DATE COMPLETED: 1/22/99
WORK ORDER NO.: 60020.090

ELEV. (feet)	DEPTH (feet)	DESCRIPTION OF MATERIALS	SAMPLE NO.	TYPE	DEPTH (feet)	BLOW PER 6 INCHES	RECOVERY (inches)	SOIL PROPERTIES W (%)	LL/PL	PP *
653.7	0.0									
		0.4' Asphalt layer								
653.3	0.4									
		0.6' Concrete layer								
652.7	1.0									
		20.0' Void								
632.7	21.0									
		14.0' Overburden								
618.7	35.0									
		8.0' Mottled brown and gray SILT, moist – medium stiff to stiff.	1	ST	35.0-37.0	ST				
			2	ST	38.0-40.0	ST		24		
			3	ST	41.0-43.0	ST		24		
610.7	43.0									
		6.0' Brown coarse and fine SAND, trace gravel, moist – medium dense. (Driller's description)								
604.7	49.0									
		4.5' Gray SILTY CLAY, moist – medium stiff. (Driller's description)								
600.2	53.5									
						NX ROCK CORE				
						RUN (inches)	RECOVERY (%)	ROD (%)		
		8.6' Gray SHALE, completely to moderately weathered, soft to medium hard.	C1	NX	60.0-62.1	25	48	0		
591.6	62.1									
		17.9' Gray SHALE, moderately to slightly weathered, closely fractured, trace sandstone and claystone layers, medium hard to hard.	C2	NX	62.1-63.5	17	83	47		
			C3	NX	63.5-65.0	18	94	0		
			C4	NX	65.0-70.0	60	92	41		
			C5	NX	70.0-75.0	60	95	51		
			C6	NX	75.0-80.0	60	87	60		
573.7	80.0									
		BORING COMPLETED								

* Pocket Penetrometer Reading – Unconfined Compressive Strength, Tons/Sq. Ft.

GENERAL NOTES

Driller: D. Maxwell
Rig No.: 42
Rig Type: Truck M-57
Method: HSA, SS, NXR
Sampling:
Remarks:

H. C. NUTTING COMPANY
GEOTECHNICAL, ENVIRONMENTAL AND TESTING ENGINEERS SINCE 1921
GAHANNA COMMERCE CENTER 790 MORRISON ROAD COLUMBUS, OHIO 43230-6642

WATER LEVEL OBSERVATIONS

Immediate: 45.0 Ft.
At Completion: 21.0 Ft.
After 0 Hours: BF Ft.
Water Used in Drilling: 45.0
Remarks:

H. C. NUTTING COMPANY
GEOTECHNICAL ENGINEERS
790 MORRISON ROAD COLUMBUS, OHIO 43230

STRUCTURE FOUNDATION INVESTIGATION
PROJECT NO. ATH-56-120 W.O. NO. 60020.090
PROPOSED BRIDGE REPLACEMENT
ATH-56-120 OVER HOCKING RIVER
ATHENS COUNTY, OHIO

BORING DATA

CHECKED BY	REVIEWED BY	DATE
K.J.M.	Y.R.	03/25/99

DRAWING ID. : LOGS.DWG

LOG OF TEST BORING

CLIENT: Burgess & Niple, Limited
PROJECT: ATH-56-120 Over Hocking River
BORING LOCATION: Station 631+03, 19 Ft. Right
ELEVATION REFERENCE: Provided by Burgess & Niple, Limited

BORING NO.: B-5
DATE STARTED: 1/19/99
DATE COMPLETED: 1/20/99
WORK ORDER NO.: 60020.090

ELEV. (feet)	DEPTH (feet)	DESCRIPTION OF MATERIALS	SAMPLE NO.	TYPE	DEPTH (feet)	BLOW PER 6 INCHES	RECOVERY (inches)	SOIL PROPERTIES W (%)	LL/PL	PP *
653.8	0.0							-		
		0.4' Concrete Layer								
653.4	0.4									
		5.1' Brown coarse and fine sand, trace gravel, moist to wet – loose to very loose. (FILL)	1	SS	.04-1.9	3-3-3	12			
			2	SS	2.5-4.0	2-1-2	4			
			3	SS	5.0-5.5	-1-	6			
648.3	5.5									
		2.0' Brown silty clay, some weathered shale fragments and gravel, moist – stiff. (FILL)	3A	SS	5.5-6.5	4-9	12	9		
646.3	7.5									
		10.0' Mottled yellowish brown and gray SILT and CLAY, some to little sand, trace sandstone fragments, moist – stiff.	4	SS	7.5-9.0	9-4-7	10	11		
			5	SS	10.0-11.5	4-6-7	14	25		
			6	SS	12.5-14.0	4-5-7	18	21		4.0
			7	SS	15.0-16.5	3-3-6	18	22		4.5+
636.3	17.5									
		7.5' Mottled brown and gray SILTY CLAY, trace wood fragments, moist – medium stiff to very soft.	8	SS	17.5-19.0	3-3-5	18	24		3.5
			9	SS	20.0-21.5	2-3-5	18	30	39/22	
628.8	25.0									
		10.0' Mottled brown and gray SILT and CLAY, trace wood fragments, moist – medium stiff to very soft.	10	SS	25.0-26.5	1-3-3	18	32		0.75
			11	SS	30.0-31.5	1/12"-3	0			
618.8	35.0									
		5.0' Mottled brown and gray SILT, trace sand, moist – stiff.	12	SS	35.0-36.5	3-4-6	18	25	27/21	
613.8	40.0									
		1.0' Mottled gray and brown SILT and CLAY with shale and sandstone fragments, moist – very stiff.	13	SS	40.0-41.0	9-13	12	18		
612.8	41.0									
		5.0' Brown coarse and fine SAND, wet – medium dense.	13A	SS	41.0-41.5	-11-	6			
			14	SS	45.0-46.0	5-8	12			
607.8	46.0									
		4.0' Brown SANDY SILT, some rock and shale fragments, moist – stiff.	14A	SS	46.0-46.5	-11-	6			
603.8	50.0									
		3.5' Mottled gray and brown SILTY CLAY, little seams, moist – very stiff.	15	SS	50.0-51.5	5-8-10	18	22		
	53.5									
		(Continued)								

* Pocket Penetrometer Reading – Unconfined Compressive Strength, Tons/Sq. Ft.

GENERAL NOTES

Driller: D. Maxwell
Rig No.: 42
Rig Type: Truck M-57
Method: HSA, SS, NXR
Remarks:

H. C. NUTTING COMPANY
GEOTECHNICAL, ENVIRONMENTAL AND TESTING ENGINEERS SINCE 1921
GAHANNA COMMERCE CENTER 790 MORRISON ROAD COLUMBUS, OHIO 43230-6642

WATER LEVEL OBSERVATIONS

Immediate: 25.0 Ft.
At Completion: 24.5 Ft.
After 24 Hours: Ft.
Water Used in Drilling: 45.0
Remarks:

LOG OF TEST BORING

CLIENT: Burgess & Niple, Limited
PROJECT: ATH-56-120 Over Hocking River
BORING LOCATION: Station 631+03, 19 Ft. Right
ELEVATION REFERENCE: Provided by Burgess & Niple, Limited

BORING NO.: B-5
DATE STARTED: 1/19/99
DATE COMPLETED: 1/20/99
WORK ORDER NO.: 60020.090

ELEV. (feet)	DEPTH (feet)	DESCRIPTION OF MATERIALS	SAMPLE NO.	TYPE	DEPTH (feet)	BLOW PER 6 INCHES	RECOVERY (inches)	SOIL PROPERTIES W (%)	LL/PL	PP *
600.3	53.5									
		6.5' Gray SHALE, completely to moderately weathered, soft to medium hard.	16	SS	55.0-55.4	100/5"	4			
						NX ROCK CORE				
						RUN (Inches)	RECOVERY (%)	RQD (%)		
593.8	60.0									
		5.0' Gray SANDSTONE, fresh to slightly weathered medium fractured with shale layers, hard.	C1	NX	60.0-65.0	60	87	60		
588.8	65.0									
		BORING COMPLETED								

* Pocket Penetrometer Reading – Unconfined Compressive Strength, Tons/Sq. Ft.

GENERAL NOTES

Driller: D. Maxwell
Rig No.: 42
Rig Type: Truck M-57
Method: HSA, SS, NXR
Sampling:
Remarks:

H. C. NUTTING COMPANY
GEOTECHNICAL, ENVIRONMENTAL AND TESTING ENGINEERS SINCE 1921
GAHANNA COMMERCE CENTER 790 MORRISON ROAD COLUMBUS, OHIO 43230-6642

WATER LEVEL OBSERVATIONS

Immediate: 25.0 Ft.
At Completion: 24.5 Ft.
After 24 Hours: Ft.
Water Used in Drilling: 45.0
Remarks:

LOG OF TEST BORING

CLIENT: Burgess & Niple, Limited
PROJECT: ATH-56-120 Over Hocking River
BORING LOCATION: Station 631+91, 11 Ft. Right
ELEVATION REFERENCE: Provided by Burgess & Niple, Limited

BORING NO.: B-6
DATE STARTED: 1/20/99
DATE COMPLETED: 1/22/99
WORK ORDER NO.: 60020.090

ELEV. (feet)	DEPTH (feet)	DESCRIPTION OF MATERIALS	SAMPLE NO.	SAMPLE TYPE	SAMPLE DEPTH (feet)	BLOW PER 6 INCHES	RECOVERY (inches)	SOIL PROPERTIES W (%)	LL/PL	PP *
653.7	0.0	0.4' Asphalt layer								
653.3	0.4	0.6' Concrete layer								
652.7	1.0	20.0' Void								
632.7	21.0	14.0' Overburden								
618.7	35.0	8.0' Mottled brown and gray SILT, moist – medium stiff to stiff.	1	ST	35.0-37.0	ST		24		
			2	ST	38.0-40.0	ST	24			
			3	ST	41.0-43.0	ST	24			
610.7	43.0	6.0' Brown coarse and fine SAND, trace gravel, moist – medium dense. (Driller's description)								
604.7	49.0	4.5' Gray SILTY CLAY, moist – medium stiff. (Driller's description)								
600.2	53.5					NX ROCK CORE RUN (Inches)	NX ROCK CORE RECOVERY (%)	NX ROCK CORE RQD (%)		
		8.6' Gray SHALE, completely to moderately weathered, soft to medium hard.	C1	NX	60.0-62.1	25	48	0		
591.6	62.1	17.9' Gray SHALE, moderately to slightly weathered, closely fractured, trace sandstone and claystone layers, medium hard to hard.	C2	NX	62.1-63.5	17	83	47		
			C3	NX	63.5-65.0	18	94	0		
			C4	NX	65.0-70.0	60	92	41		
			C5	NX	70.0-75.0	60	95	51		
			C6	NX	75.0-80.0	60	87	60		
573.7	80.0	BORING COMPLETED								

* Pocket Penetrometer Reading – Unconfined Compressive Strength, Tons/Sq. Ft.

GENERAL NOTES

Driller: D. Maxwell
Rig No.: 42
Rig Type: Truck M-57
Method: HSA, SS, NXR
Sampling:

Remarks:

H. C. NUTTING COMPANY
GEOTECHNICAL, ENVIRONMENTAL AND TESTING ENGINEERS SINCE 1921
GAHANNA COMMERCE CENTER 790 MORRISON ROAD COLUMBUS, OHIO 43230-5642

WATER LEVEL OBSERVATIONS

Immediate: 45.0 Ft.
At Completion: 21.0 Ft.
After 0 **Hours:** BF Ft.
Water Used in Drilling: 45.0

Remarks:

SOIL PROFILE

ATH-56-120
PROPOSED BRIDGE REPLACEMENT
ATH-56-120 OVER HOCKING RIVER
ATHENS COUNTY, OHIO

H.C. NUTTING COMPANY
GEOTECHNICAL ENGINEERS
COLUMBUS, OHIO 43230

2
3

LOG OF TEST BORING

CLIENT: Burgess & Niple, Limited
PROJECT: ATH-56-120 Over Hocking River
BORING LOCATION: Station 633+02, 11 Ft. Right
ELEVATION REFERENCE: Provided by Burgess & Niple, Limited

BORING NO.: B-7
DATE STARTED: 1/13/99
DATE COMPLETED: 1/13/99
WORK ORDER NO.: 60020.090

ELEV. (feet)	DEPTH (feet)	DESCRIPTION OF MATERIALS	SAMPLE NO.	SAMPLE TYPE	SAMPLE DEPTH (feet)	BLOW PER 6 INCHES	RECOVERY (inches)	SOIL PROPERTIES W (%)	SOIL PROPERTIES LL/PL	SOIL PROPERTIES PP *
653.0	0.0									-
		0.4' Asphalt layer								
652.6	0.4	0.6' Concrete layer								
652.0	1.0	24.5' Void								
627.5	25.5	7.5' Water								
620.0	33.0	13.0' Brown GRAVEL and/or STONE FRAGMENTS with sand, little gravel, wet – very loose to medium dense.	1	SS	33.0-34.5	3-1-2	0			
			2	SS	35.0-36.5	12-2-2	4			
			3	SS	40.0-41.5	5-2-2	6			
			4	SS	45.0-46.0	24-12	4			
607.0	46.0	5.0' Brown fine SAND, wet – medium dense.	4A	SS	46.0-46.5	-14-	3			
602.0	51.0	4.0' Gray SILT, moist – stiff.	5	SS	50.0-51.0	24-11	12			
			5A	SS	51.0-51.5	-7-	3	18		
598.0	55.0	2.0' Gray SHALE completely to moderately weathered, soft to medium hard.	6	SS	55.0-55.8	23-100/4"	6	10		
						NX ROCK CORE RUN (inches)	NX ROCK CORE RECOVERY (%)	NX ROCK CORE RQD (%)		
596.0	57.0	15.0' Gray SANDSTONE, fresh to slightly weathered, medium fractured, medium hard to hard.	C1	NX	57.0-62.0	60	93	60		
			C2	NX	62.0-67.0	60	100	5		
			C3	NX	67.0-72.0	60	100	60		
581.0	72.0	5.0' Gray SHALE, slightly weathered, medium fractured, medium hard to hard.	C4	NX	72.0-77.0	60	87	12		
576.0	77.0	BORING COMPLETED								

* Pocket Penetrometer Reading – Unconfined Compressive Strength, Tons/Sq. Ft.

GENERAL NOTES

Driller: D. Maxwell
Rig No.: 42
Rig Type: Truck M-57
Method: HSA, SS, NXR
Sampling:
Remarks:

H. C. NUTTING COMPANY
GEOTECHNICAL, ENVIRONMENTAL AND TESTING ENGINEERS SINCE 1921
GAHANNA COMMERCE CENTER 790 MORRISON ROAD COLUMBUS, OHIO 43230-6642

WATER LEVEL OBSERVATIONS

Immediate: 25.5 Ft.
At Completion: 25.5 Ft.
After 24 Hours: 25.5 Ft.
Water Used in Drilling: 35.0
Remarks:

LOG OF TEST BORING

CLIENT: Burgess & Niple, Limited
PROJECT: ATH-56-120 Over Hocking River
BORING LOCATION: Station 633+97, 26 Ft. Right
ELEVATION REFERENCE: Provided by Burgess & Niple, Limited

BORING NO.: B-8
DATE STARTED: 1/6/99
DATE COMPLETED: 1/7/99
WORK ORDER NO.: 60020.090

ELEV. (feet)	DEPTH (feet)	DESCRIPTION OF MATERIALS	SAMPLE NO.	SAMPLE TYPE	SAMPLE DEPTH (feet)	BLOW PER 6 INCHES	RECOVERY (inches)	SOIL PROPERTIES W (%)	SOIL PROPERTIES LL/PL	SOIL PROPERTIES PP *
652.1	0.0									-
		0.4' Asphalt layer								
651.7	0.4	2.1' Brown silt and clay, some sand, trace gravel, moist – very stiff. (FILL)	1	SS	0.4-1.9	17-12-9	18	17		
649.6	2.5	5.0' Brown silt and clay, trace shale fragments, moist – very stiff. (FILL)	2	SS	2.5-4.0	13-14-15	18	8	28/17	
			3	SS	5.0-6.5	12-9-7	8	9		
644.6	7.5	2.5' Brown SILTY CLAY and sand, trace shale fragments and asphalt fragments, moist – stiff. (FILL)	4	SS	7.5-9.0	6-5-7	18	11		
642.1	10.0	2.5' Brown SILTY CLAY, trace shale fragments, moist – stiff.	5	SS	10.0-11.5	5-6-10	10	15		
639.6	12.5	12.5' Brown GRAVEL and/or STONE FRAGMENTS with sand and silt, moist - loose.	6	SS	12.5-14.0	2-3-4	10			
			7	SS	15.0-16.5	3-3-4	18			
			8	SS	17.5-19.0	4-3-4	18			
			9	SS	20.0-21.5	3-5-4	10			
627.1	25.0	5.0' Brown GRAVEL and/or STONE FRAGMENTS with sand, moist – loose.	10	SS	25.0-26.5	4-4-5	18			
622.1	30.0	5.0' Brown coarse and fine SAND and gravel, wet – medium dense.	11	SS	30.0-31.5	4-6-7	12			
617.1	35.0	5.0' Brown GRAVEL and or STONE FRAGS with sand wet – md. dense	12	SS	35.0-36.5	9-8-8	12			
612.1	40.0	5.0' Gray fine SAND, wet – medium dense.	13	SS	40.0-41.5	11-11-12	18			
607.1	45.0	7.5' Gray coarse and find SAND and GRAVEL, wet – medium dense.	14	SS	45.0-46.5	14-8-11	18			
			15	SS	50.0-51.5	8-10-13	18			
599.6	52.5	2.5' Gray SHALE, complete weathered, soft.								
						NX ROCK CORE RUN (inches)	NX ROCK CORE RECOVERY (%)	NX ROCK CORE RQD (%)		
597.1	55.0	5.0' Gray SANDSTONE, moderately to slightly weathered, medium hard to hard.	16	SS	55.0-55.7	90-100/3"	6	12		
			C1	NX	55.0-60.0	60	98	100		
592.1	60.0	BORING COMPLETED								

* Pocket Penetrometer Reading – Unconfined Compressive Strength, Tons/Sq. Ft.

GENERAL NOTES

Driller: D. Maxwell
Rig No.: 42
Rig Type: Truck M-57
Method: HSA, SS, NXR
Remarks:

H. C. NUTTING COMPANY
GEOTECHNICAL, ENVIRONMENTAL AND TESTING ENGINEERS SINCE 1921
GAHANNA COMMERCE CENTER 790 MORRISON ROAD COLUMBUS, OHIO 43230-6642

WATER LEVEL OBSERVATIONS

Immediate: 30.0 Ft.
At Completion: 26.5 Ft.
After 0 Hours: BF Ft.
Water Used in Drilling: 35.0
Remarks:

H. C. NUTTING COMPANY
GEOTECHNICAL ENGINEERS
790 MORRISON ROAD COLUMBUS, OHIO 43230

STRUCTURE FOUNDATION INVESTIGATION
PROJECT NO. ATH-56-120 W.O. NO. 60020.090
PROPOSED BRIDGE REPLACEMENT
ATH-56-120 OVER HOCKING RIVER
ATHENS COUNTY, OHIO

BORING DATA

CHECKED BY	REVIEWED BY	DATE
K.J.M.	Y.R.	03/25/99

DRAWING ID. : LOGS.DWG

LOG OF TEST BORING

CLIENT:	Burgess & Niple, Limited	**BORING NO.:**	B-7
PROJECT:	ATH-56-120 Over Hocking River	**DATE STARTED:**	1/13/99
BORING LOCATION:	Station 633+02, 11 Ft. Right	**DATE COMPLETED:**	1/13/99
ELEVATION REFERENCE:	Provided by Burgess & Niple, Limited	**WORK ORDER NO.:**	60020.090

ELEV. (feet)	DEPTH (feet)	DESCRIPTION OF MATERIALS	SAMPLE NO.	TYPE	DEPTH (feet)	BLOW PER 6 INCHES	RECOVERY (inches)	SOIL PROPERTIES W (%)	LL/PL	PP *
653.0	0.0									
		0.4' Asphalt layer								
652.6	0.4									
		0.6' Concrete layer								
652.0	1.0									
		24.5' Void								
627.5	25.5									
		7.5' Water								
620.0	33.0									
		13.0' Brown GRAVEL and/or STONE FRAGMENTS with sand, little gravel, wet – very loose to medium dense.	1	SS	33.0-34.5	3-1-2	0			
			2	SS	35.0-36.5	12-2-2	4			
			3	SS	40.0-41.5	5-2-2	6			
607.0	46.0		4	SS	45.0-46.0	24-12	4			
		5.0' Brown fine SAND, wet – medium dense.	4A	SS	46.0-46.5	-14-	3			
602.0	51.0		5	SS	50.0-51.0	24-11	12			
		4.0' Gray SILT, moist – stiff.	5A	SS	51.0-51.5	-7-	3	18		
598.0	55.0		6	SS	55.0-55.8	23-100/4"	6	10		
		2.0' Gray SHALE completely to moderately weathered, soft to medium hard.								
						NX ROCK CORE				
						RUN (Inches)	RECOVERY (%)	RQD (%)		
596.0	57.0									
		15.0' Gray SANDSTONE, fresh to slightly weathered, medium fractured, medium hard to hard.	C1	NX	57.0-62.0	60	93	60		
			C2	NX	62.0-67.0	60	100	5		
			C3	NX	67.0-72.0	60	100	60		
581.0	72.0									
		5.0' Gray SHALE, slightly weathered, medium fractured, medium hard to hard.	C4	NX	72.0-77.0	60	87	12		
576.0	77.0									
		BORING COMPLETED								

* **Pocket Penetrometer Reading – Unconfined Compressive Strength, Tons/Sq. Ft.**

GENERAL NOTES

Driller:	D. Maxwell
Rig No.:	42
Rig Type:	Truck M-57
Method:	HSA, SS, NXR
Sampling:	
Remarks:	

H. C. NUTTING COMPANY

GEOTECHNICAL, ENVIRONMENTAL AND TESTING ENGINEERS SINCE 1921
GAHANNA COMMERCE CENTER 790 MORRISON ROAD COLUMBUS, OHIO 43230-6642

WATER LEVEL OBSERVATIONS

Immediate:	25.5	Ft.
At Completion:	25.5	Ft.
After 24 Hours:	25.5	Ft.
Water Used in Drilling:	35.0	

Remarks:

LOG OF TEST BORING

CLIENT:	Burgess & Niple, Limited	**BORING NO.:**	B-8
PROJECT:	ATH-56-120 Over Hocking River	**DATE STARTED:**	1/6/99
BORING LOCATION:	Station 633+97, 26 Ft. Right	**DATE COMPLETED:**	1/7/99
ELEVATION REFERENCE:	Provided by Burgess & Niple, Limited	**WORK ORDER NO.:**	60020.090

ELEV. (feet)	DEPTH (feet)	DESCRIPTION OF MATERIALS	SAMPLE NO.	SAMPLE TYPE	SAMPLE DEPTH (feet)	BLOW PER 6 INCHES	RECOVERY (inches)	SOIL PROPERTIES W (%)	SOIL PROPERTIES LL/PL	SOIL PROPERTIES PP *
652.1	0.0									-
		0.4' Asphalt layer								
651.7	0.4									
		2.1' Brown silt and clay, some sand, trace gravel, moist – very stiff. (FILL)	1	SS	0.4-1.9	17-12-9	18	17		
649.6	2.5									
		5.0' Brown silt and clay, trace shale fragments, moist – very stiff. (FILL)	2	SS	2.5-4.0	13-14-15	18	8	28/17	
			3	SS	5.0-6.5	12-9-7	8	9		
644.6	7.5									
		2.5' Brown SILTY CLAY and sand, trace shale fragments and asphalt fragments, moist – stiff. (FILL)	4	SS	7.5-9.0	6-5-7	18	11		
642.1	10.0		5	SS	10.0-11.5	5-6-10	10	15		
		2.5' Brown SILTY CLAY, trace shale fragments, moist – stiff.								
639.6	12.5									
		12.5' Brown GRAVEL and/or STONE FRAGMENTS with sand and silt, moist - loose.	6	SS	12.5-14.0	2-3-4	10			
			7	SS	15.0-16.5	3-3-4	18			
			8	SS	17.5-19.0	4-3-4	18			
			9	SS	20.0-21.5	3-5-4	10			
627.1	25.0									
		5.0' Brown GRAVEL and/or STONE FRAGMENTS with sand, moist – loose.	10	SS	25.0-26.5	4-4-5	18			
622.1	30.0									
		5.0' Brown coarse and fine SAND and gravel, wet – medium dense.	11	SS	30.0-31.5	4-6-7	12			
617.1	35.0									
		5.0' Brown GRAVEL and or STONE FRAGS with sand wet – md. dense	12	SS	35.0-36.5	9-8-8	12			
612.1	40.0									
		5.0' Gray fine SAND, wet – medium dense.	13	SS	40.0-41.5	11-11-12	18			
607.1	45.0									
		7.5' Gray coarse and find SAND and GRAVEL, wet – medium dense.	14	SS	45.0-46.5	14-8-11	18			
			15	SS	50.0-51.5	8-10-13	18			
599.6	52.5									
		2.5' Gray SHALE, complete weathered, soft.								
						NX ROCK CORE				
						RUN (inches)	RECOVERY (%)	RQD (%)		
597.1	55.0									
		5.0' Gray SANDSTONE, moderately to slightly weathered, medium hard to hard.	16	SS	55.0-55.7	90-100/3"	6	12		
			C1	NX	55.0-60.0	60	98	100		
592.1	60.0									
		BORING COMPLETED								

* **Pocket Penetrometer Reading – Unconfined Compressive Strength, Tons/Sq. Ft.**

GENERAL NOTES

Driller:	D. Maxwell
Rig No.:	42
Rig Type:	Truck M-57
Method:	HSA, SS, NXR

Remarks:

H. C. NUTTING COMPANY

GEOTECHNICAL, ENVIRONMENTAL AND TESTING ENGINEERS SINCE 1921
GAHANNA COMMERCE CENTER 790 MORRISON ROAD COLUMBUS, OHIO 43230-6642

WATER LEVEL OBSERVATIONS

Immediate:	30.0	**Ft.**
At Completion:	26.5	**Ft.**
After 0 Hours:	BF	**Ft.**
Water Used in Drilling:	35.0	

Remarks:

SOIL PROFILE

ATH-56-120
PROPOSED BRIDGE REPLACEMENT
ATH-56-120 OVER HOCKING RIVER
ATHENS COUNTY, OHIO

H.C. NUTTING COMPANY
GEOTECHNICAL ENGINEERS
COLUMBUS, OHIO 43230

3/3

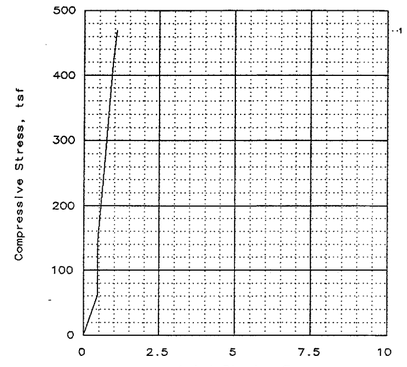
BURGESS & NIPLE, LIMITED
ATH-56-120 Over Hocking River
W.O. 60020.090

TABLE I
CLASSIFICATION TEST DATA

Boring No.	Sample No.	Depth (Ft.)	Mechanical Analysis Gravel %	Sand %	Silt %	Clay %	Moisture Content %	Atterberg Limits Liquid Limit %	Plastic Limit %	Plasticity Index
B-5	3a	5.5 – 6.5					9			
	4	7.5 – 9.0					11			
	5	10.0 – 11.5					25			
	6	12.5 – 14.0					21			
	7	15.0 – 16.5					22			
	8	17.5 – 19.0					24			
	9	20.0 – 21.5					30			
	10	25.0 – 26.5					32			
	11	30.0 – 31.5					32			
	12	35.0 – 36.5					25			
	13	40.0 – 41.0					18			
	15	50.0 - -51.5					22			
	S-2,S-3	35.0 – 41.5	16.8	77.6	- 5.6 -					
	S-4,S-5	46.0 – 51.5	4.2	86.0	- 9.8 -					
B-7	5a	51.0 – 51.5					18			
	6	55.0 -					10			
B-8	1	0.4 – 1.9					17			
	2	2.5 – 4.0	10.4	41.1	31.9	16.6	8	28	17	11
	3	5.0 – 6.5					9			
	4	7.5 – 9.0					11			
	5	10.0 – 11.5					15			
	8	17.5 – 19.0	0.0	75.5	18.4	6.1				
	11	30.0 – 31.5	38.1	49.9	- 12.0 -					
	16	55.0 – 55.7					12			

H. C. Nutting Company

UNCONFINED COMPRESSION TEST



Sample number:	1				
Unconfined strength, tsf	470				
Undrained shear strength, tsf	235				
Strain rate, %/min	1.000				
Water content, %	0.7				
Wet density, pcf	147.9				
Dry density, pcf	146.8				
Void ratio	0.1649				
Saturation, %	11.5				
Specimen diameter, in	1.98				
Specimen height, in	4.22				

Description: SANDSTONE

LL = | PL = | PI = | GS = | Type:

Project No.: 60020.090
Date: 3/4/99
Remarks:
Lab No. 1044

Fig No.

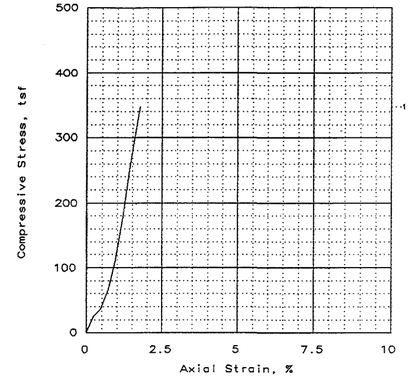
Client: Burgess & Niple, Limited

Project: ATH-56-120 Over Hocking River

Location: Boring:B-7
Depth:60.5' Sample:RC

UNCONFINED COMPRESSION TEST
H. C. NUTTING COMPANY

UNCONFINED COMPRESSION TEST



Sample number:	1				
Unconfined strength, tsf	348				
Undrained shear strength, tsf	174				
Strain rate, %/min	1.000				
Water content, %	0.9				
Wet density, pcf	164.0				
Dry density, pcf	162.5				
Void ratio	0.0293				
Saturation, %	82.2				
Specimen diameter, in	1.97				
Specimen height, in	4.17				

Description: SANDSTONE

LL = | PL = | PI = | GS = | Type:

Project No.: 60020.090
Date: 3/4/99
Remarks:
Lab No. 1045

Fig No.

Client: Burgess & Niple, Limited

Project: ATH-55-120 Over Hocking River

Location: Boring:B-7
Depth:68.0' Sample:RC

UNCONFINED COMPRESSION TEST
H. C. NUTTING COMPANY

H. C. NUTTING COMPANY
GEOTECHNICAL ENGINEERS
790 MORRISON ROAD COLUMBUS, OHIO 43230

STRUCTURE FOUNDATION INVESTIGATION
PROJECT NO. ATH-56-120 W.O. NO. 60020.090
PROPOSED BRIDGE REPLACEMENT
ATH-56-120 OVER HOCKING RIVER
ATHENS COUNTY, OHIO

BORING DATA

CHECKED BY	REVIEWED BY	DATE
K.J.M.	Y.R.	03/25/99

DRAWING ID.: LOGS.DWG

inter-office communication

to: Gene Geiger, P.E., Geotechnical Engineer date: 12/9/98

from: Mark Stouffer, P.E., Soils & Foundation

subject: Report of Embankment Failure Investigation

Ath-West Union St. Bridge (West Abutment)

Athens

Transmitted herewith are the results of the drilling, sampling and testing phases of the embankment failure investigation made for the subject project.

Enclosures consisting of five sheets are being sent to the district (in the form of a design file) to be attached to the plans.

If there are any questions, please contact this office.

mrs
MRS
Enclosures

cc: L. D. Coler
S. Eldabaja
R. Engel
R. E. Morris
File

To: Gene Geiger@MaterialsMgmt@EngPolicy
Richard Engel@StructuralEng@EngPolicy
Mark Stouffer@Mate[redacted]Mgmt@EngPolicy
Cc:
Bcc:
From: Saleh Eldabaja@Production@D-10
Subject: ATH WEST UNION BRIDGE
Date: Tuesday, October 27, 1998 11:39 AM
Attach:
Certify: N

All,

the following Sta , Offset, and Elevations are for the soil borings

Boring # 1	631+67.8	53.83 LT	elev. 639.11
Boring # 2	631+57.20	44.54 RT	elev. 639.73
Boring # 3	631+89.90	26.2 LT	elev. 634.91
Boring # 4	631+89.8	24.25 RT	elev. 633.57

To: Gene Geiger@MaterialsMgmt@EngPolicy
Richard Engel@StructuralEng@EngPolicy
Mark Stouffer@Mater[redacted]Mgmt@EngPolicy
Cc:
Bcc:
From: Saleh Eldabaja@Production@D-10
Subject: Athens West Union Bridge Data
Date: Tuesday, October 27, 1998 10:53 AM
Attach: i:\users\seldabaj\dgn\ath56\ath56.dgn
Certify: N

All,

The attached design file includes Site Plan ,5 X-Section sheets, And 2 Profiles for the bridge.

Each sheet is a saved view that can be recalled using sheet name.

Example Vl=plan for plan sheet
Vl=prof1 for porfile scale 1:1
Vl=profile2 for profile scale 5:1
Vl=xs1 for x-section sheet 1

Thanks

Gene wants a hard copy

FIELD DATA - SOIL LOG

Project Code 0021 | **Project Identification** Ath - West Union St
Co., Rt., Br.No./Sec.No.

Station 631+57. **Offset** 44R ℄ | **Order Code**

Location No. B-1 **Over:** Hocking River

Pier-Abut.

Started: 10-13-98 **Equipment:** B-53

Completed: 10-14-98 **Water Level:** @ 10′ 629.73

Depth Feet	Samples	Elevation	Description	
0		639.73	0.0-2.5 Br. Sandy Silty Clay	
			Br. Sandy, Silty Clay	
	15		2.5-4.0	B-4-5-5
			Br. Sandy, Silty Clay	
5	16		5.0-6.5	B-5-4-5
			Moist Br. Sandy, Silty Clay	
	17		7.5-9.0	B-3-1-1
		Tube wet	Wet Gr. Sandy, Silty Clay	
10	18		10.0-11.5	B-2-2-1
			Gr. Sandy Silty Clay	
	19		12.5-14.0	B-1-1-1
			Gr. Sandy, Silty Clay	
15	20		15.0-16.5	B-1-1-1
			Gr. Sandy, Silty Clay	
	21		17.5-19.0	B-1-1-1
			Gr. Sandy, Silty Clay	
20	22		20.0-21.5	B-2-3-5
			Gr. Sandy, Silty Clay	
25	23		25.0-26.5	B-3-6-10
25				
			Gray Sand + Gravel	
30	24		30.0-31.5	B-13-19-19
			Wash out @ 35.0 4.0 Sand Auger	
			Gr. Sandy Silty Clay w Stone Frags	
35	25		35.0-36.5	B-10-8-15
			Gr. Sandy, Silty Clay to Gr. Shaley Clay	
40	26		40.0-41.5	B-32-41-70
			Gr. Shaley Clay	
45	27		45.0-45.5	B-75 (0.5′)
			Gr. Sandstone	
50	28		50.0-50.5	B-80 (0.5′)
			Barrel in @ 50.5	
			Core in Box # 54 *	
			Gr. Sandstone	
55			Run 5.0	Recovered 5.0
			Gr. Sandstone, Layer Coal to Sandstone	
60			Run 5.0	Recovered 5.0

Remarks: Sandy Clay Shale
+65 ft Run 5.0 Recovered 5.0
End of Boring 65.5

Party: Huff, Sabo, Carey

Chief of Party: Snyder

Form TE-6
DOT-Revised 1/92

LOG OF CORE BORING

Emb. Found. Inv.

BRIDGE _____ PROFILE _____ SPECIAL X DATE _____ BY _____

COUNTY, ROUTE & SECTION Ath - W. Union St. Bc.

STATION & OFFSET 631+57, 44' Rt.

BORING NO. ~~B-2~~ B-1 SURFACE ELEV. _____

TOTAL BORING DEPTH 65.5 TOP OF ROCK ELEV. _____

BORING TERMINATION ELEV. _____

DEPTH	DESCRIPTION SOIL SAMPLES -/ROCK CORE	% CORE LOSS
	TOP OF ROCK	
40.0 45.0	Drive sample.	
50.0	" "	
58.5	Sandstone, gray, firm, micaceous, w. numerous carbonaceous laminae and thin black shale seams, fine-grained, thin-bedded, jointed in places.	0%
58.7	Coal, black, vitreous, jointed.	0%
59.5	weathered shale, dark olive, soft, w. thin clay seams, slickensided, jointed.	0%
59.9	shale, black, firm, highly arenaceous, w. concretions, w. a thick highly weathered seam in the middle, jointed near the top, highly slickensided; w. a thick gray fine-grained sandstone seam at the top.	0%
61.6	Sandstone, gray, firm, micaceous, → fine-grained, medium-bedded.	0%
65.5	BOTTOM OF BORING	

FIELD DATA - SOIL LOG

Project Code | Project Identification: Ath-West Union St

Station: 63+67.5 | Offset: 54 L | Co., Rt., Br.No./Sec.No. | Order Code: 01

Location No. X B-2 | Over: Hocking River

Pier-Abut.

Started: 10-15-98 | Equipment: B-53

Completed: 10-20-98 | Water Level: 20' / 619.11'

Depth Feet	Samples	Elevation 639.11	Description
0			0.0 to 2.5 Br Sandy, Silty Clay
	(45)		Br + Gr Sandy, Silty Clay w/ Stone Frags 2.5 - 4.0 B-6-7-9
5	(46)		Br. + Gr. Sandy, Silty Clay 5.0 - 6.5 B-7-6-6
	(47)		Br. + Gr Sandy, Silty Clay 7.5 - 9.0 B-9-9-9
	(48)		Moist Br. + Gr Sandy, Silty Clay 10.0 - 11.5 B-1-1-2
	(49)		Moist Gr. Sandy, Silty Clay 12.5 - 14.0 B-3-3-3
15	(50)		Moist Gr. Sandy, Silty Clay 15.0 - 16.5 B-1-1-2
	(51)		Moisy Gr. Sandy, Silty Clay 17.5 - 19.0 B-2-4-3
20	(52)	Tube wet	Moist Gr. Sandy, Silty Clay 20.0 - 21.5 B-1-1-1
			Moist Gr. Sandy, Silty Clay
25	(53)		25.0 - 26.5 B-3-2-2

Form TE-6
DOT-Revised 1/92

25		
30	(54)	Gr. Sandy, Silty Clay to Sand and Gravel 30.0 - 31.5 B-3-4-7
35	(55)	Roadway GR. Silty SAND 35.0 - 36.5 B-6-8-13
40	(56)	GR. Silt 40.0 - 41.5 B-2-4-4
45	(57)	WEAK GR. CLAY SHALE 45.0 - 46.0 B-27-60
50	(58)	Gr. Clay Shale 50.0 - 50.5 B - 100 (0.5') Barrel in @ 50.5 * Core in Box # 23 * Gr. Clay Shale w layers of Gr. Sandstone
55		Run 5.0 Recovered 5.0
60		Gr. Clay Shale w layers of Gr. Sandstone Run 5.0 Recovered 5.0

Remarks: Wash out @ 35.4.0 Sand in Augers
E.O.B. 60.5'

Party: Hutt, Carey

Chief of Party: Snyder

LOG OF CORE BORING Emb. Fnd. Inv.

BRIDGE X PROFILE ____ SPECIAL X DATE ____ BY ____

COUNTY, ROUTE & SECTION Ath - West Union St. br.

STATION & OFFSET 631+67, 54.Ct.

BORING NO. BX1 B-2 SURFACE ELEV. ____

TOTAL BORING DEPTH 60.5 TOP OF ROCK ELEV. ____

BORING TERMINATION ELEV. ____

DEPTH	DESCRIPTION SOIL SAMPLES - ROCK CORE	% CORE LOSS
	TOP OF ROCK	
45.0	Drive sample	
50.0	Drive sample	
50.5	Sandstone, gray, firm, micaceous, fine-grained, thin-bedded, w. clay seams, jointed in part, ~~black and argillaceous in part~~	0%
54.1	Shale, black, firm, carbonaceous, slightly arenaceous, w. scattered clay seams, coaly and broken and jointed in part, slickensided at the bottom; interbedded w. gray, firm, micaceous, fine-grained sandstone interbeds comprising 33% of the interval.	0%
60.2	Clay-shale, dark olive to black, medium-firm, carbonaceous, slickensided	0%
60.5	BOTTOM OF BORING	

black and argillaceous in part

FIELD DATA - SOIL LOG

Project Code: 0 0 2 1

Project Identification: Ath-West Union St

Co., Rt., Br.No./Sec.No.

Station: 631+89. **Offset:** 26 L ℄

Order Code:

Location No. 3 **Over:** Hocking River

Pier-Abut.

Started: 10-14-98 **Equipment:** B-53

Completed: 10-15-98 **Water Level:** ~~12'~~ 622.91'

Depth Feet	Samples	Elevation (Surveyor)	Description	
0		634.91		
			0.0 to 2.5 Br Sandy, Silty Clay	
			Br + Gr. Sandy, Silty Clay	
	(29)		2.5 - 4.0	B - 5 - 5 - 5
			Br Sandy, Silty Clay	
5	(30)		5.0 - 6.5	B - 3 - 2 - 2
			Br. Sandy, Silty Clay	
	(31)	Flow Line	7.5 - 9.0	B - 1 - 1 - 2
			Br. + Gr. Silty Clay	
10	(32)		9.0 - 10.5	B - 1 - 1 - 2
			Gr. Sandy, Silty Clay	
	(33)		10.5 - 12.0	B - 1 - 1 - 1
			Gr. Sandy, Silty Clay	
	(34)	Tube wst.	12.0 - 13.5	B - 1 - 1 - 1
15			Gr. Sandy, Silty Clay	
	(35)		13.5 - 15.0	B - 1 - 2 - 3
			Gr. Sandy, Silty Clay	
	(36)		15.0 - 16.5	B - 1 - 1 - 1
			Gr. Sandy, Silty Clay	
20	(37)		16.5 - 18.0	B - 1 - 1 - 1
			Gr. Sandy, Silty Clay	
	(38)		20.0 - 21.5	B - 1 - 1 - 2
			Gr. Sandy, Silty Clay	
	(39)		22.5 - 24.0	B - 1 - 2 - 4
25				

Depth Feet	Samples	Elevation	Description	
25		Gr-Br	Sand + Gravel	
	(40)		25.0 - 26.5	B - 2 - 2 - 5
		Gr	Sand + Gravel	
	(41)		27.5 - 29.0	B - 6 - 5 - 4
		Gr	Sand + Gravel	
30	(42)		30.0 - 31.5	B - 4 - 7 - 8
			Gr. Sand to Gr. Sandy, Silty Clay	
35	(43)		35.0 - 36.5	B - 9 - 20 - 26
			Gr. Sandy, Shaley Clay	
40	(44)		40.0 - 41.0	B - 30 - 70
			Augered to 45.0 Washed out	
			Drove Sample → No Penetration	
			Barrel in @ 45.0	
45		*	Core in Box #15 *	
			Gr. Sandstone	
50			Run 5.0	Recovered 5.0
			Gr. Sandstone + Gr. Clay Shale	
55			Run 5.0	Recovered 4.7
			End of Boring 55.0	
60				

Remarks: Washed out @ 27.5 4.0 Sand in Augers

Washed out @ 45.0 3.0 Sand in Augers

Party: Hutt, Sabo, Carey

Chief of Party: Snyder

see B-1

☆ ☆ perhaps ~~the reason~~ for the heaving sand below T of R was SS under pressure that augers went through

Form TE-6
DOT-Revised 1/92

LOG OF CORE BORING Emb. Found. Inv.

BRIDGE _____ PROFILE _____ SPECIAL X DATE _____ BY _____

COUNTY, ROUTE & SECTION Ath - W. Union St. bridge

STATION & OFFSET 631+89, 26' Lt.

BORING NO. B-3 SURFACE ELEV. _____

TOTAL BORING DEPTH 55.0 TOP OF ROCK ELEV. _____

BORING TERMINATION ELEV. _____

DEPTH	DESCRIPTION SOIL SAMPLES - ROCK CORE	% CORE LOSS
	TOP OF ROCK	
40.0	Drive Sample	
45.0	Sandstone, gray, dark gray, firm, micaceous, fine-grained, very fine-grained in places, thin to medium-bedded, jointed at the top, w. a thick broken and jointed seam ~~containing clay~~ in the upper portion; w. black carbonaceous shale seams in the lower portion.	0%
50.0	Sandstone, gray, firm, micaceous, fine-grained, thin-bedded, w. thin to thick clay seams, jointed in part; interbedded w. black, firm, carbonaceous, arenaceous, partially broken and jointed Shale ~~interbeds~~ interbeds comprising 45-50% of the interval and ~~fracturing~~ with a thick weathered shale seam at 50.4' deep.	6%
55.0	BOTTOM OF BORING	

FIELD DATA - SOIL LOG

Project Code: 0021 | Project Identification: Ath - West Union St

Co., Rt., Br.No./Sec.No.

Station: 631+89.2 R | Offset: ℄ | Order Code:

Location No. 4 | Over: Hocking River

Pier-Abut.

Started: 10-13-98 | Equipment: B-53

Completed: 10-13-98 | Water Level: ~~+2'~~ @ 21.57'

Depth Feet	Samples	Elevation	Description
0		633.57	0.0 to 5.0 Br Sandy Silty Clay (Fill Material)
			Br. & Gr. Sandy, Silty Clay
5	(1)		5.0 - 6.5 B - 1-2-2
			Moist Br & Gr. Silty Clay
	(2)	Flow Line	7.5 - 9.0 B - 1-2-2
			Moist Gr. Silty Clay
10	(3)		9.0 - 10.5 B - 1-1-2
			Moist Gr. Silty Clay
	(4)		10.5 - 12.0 B - 1-1-1
			Gr. Sandy, Silty Clay
	(5)	Tube wet	12.0 - 13.5 B - 1-2-2
15			Gr. Sandy, Silty Clay
	(6)		13.5 - 15.0 B - 1-1-1
			Gr. Silty Clay
	(7)		15.0 - 16.5 B - 1-1-1
			Gr. Silty Clay
20	(8)		16.5 - 18.0 B - 1-2-2
			Gr. Silty Clay
	(9)		20.0 - 21.5 B - 1-1-2
			Gr. Silty Clay
	(10)		22.5 - 24.0 B - 1-1-2
25			

25		Gr Sand and Gravel	
	(11)	25.0 - 26.5	B - 1-3-4
		Gr Sand and Gravel	
	(12)	27.5 - 29.0	B - 9-11-9
		Gr Sand & Gravel to Gr. Shaley Clay	
30	(13)	30.0 - 31.5	B - 9-7-24
		Gr Clay Shale	
	(14)	33.5 - 34.0	B - 65 (0.5')
		Hit rock @ 23.0 Augered to	
35		33.5 drove Sample, Augered down to	
		35.0 Put barrel in @ 35.0	
	*	Core in Box # 56 *	
		Gr Clay Shale	
40		Run 5.0	Recovered 5.0
		Gr Clay Shale	
45		Run 5.0	Recovered 5.0
		End of Boring 45.0	
50			
55			
60			

Remarks: Original Material @ 6.0 Washed out @ 27.5, 2.5 Sand in Augers

Party: Hutt, Carey, Sabo

Chief of Party: Snyder

Form TE-6
DOT-Revised 1/92

LOG OF CORE BORING Emb. Fence

BRIDGE _____ PROFILE _____ SPECIAL X DATE _____ BY _____

COUNTY, ROUTE & SECTION Ath - west. Union St. br.

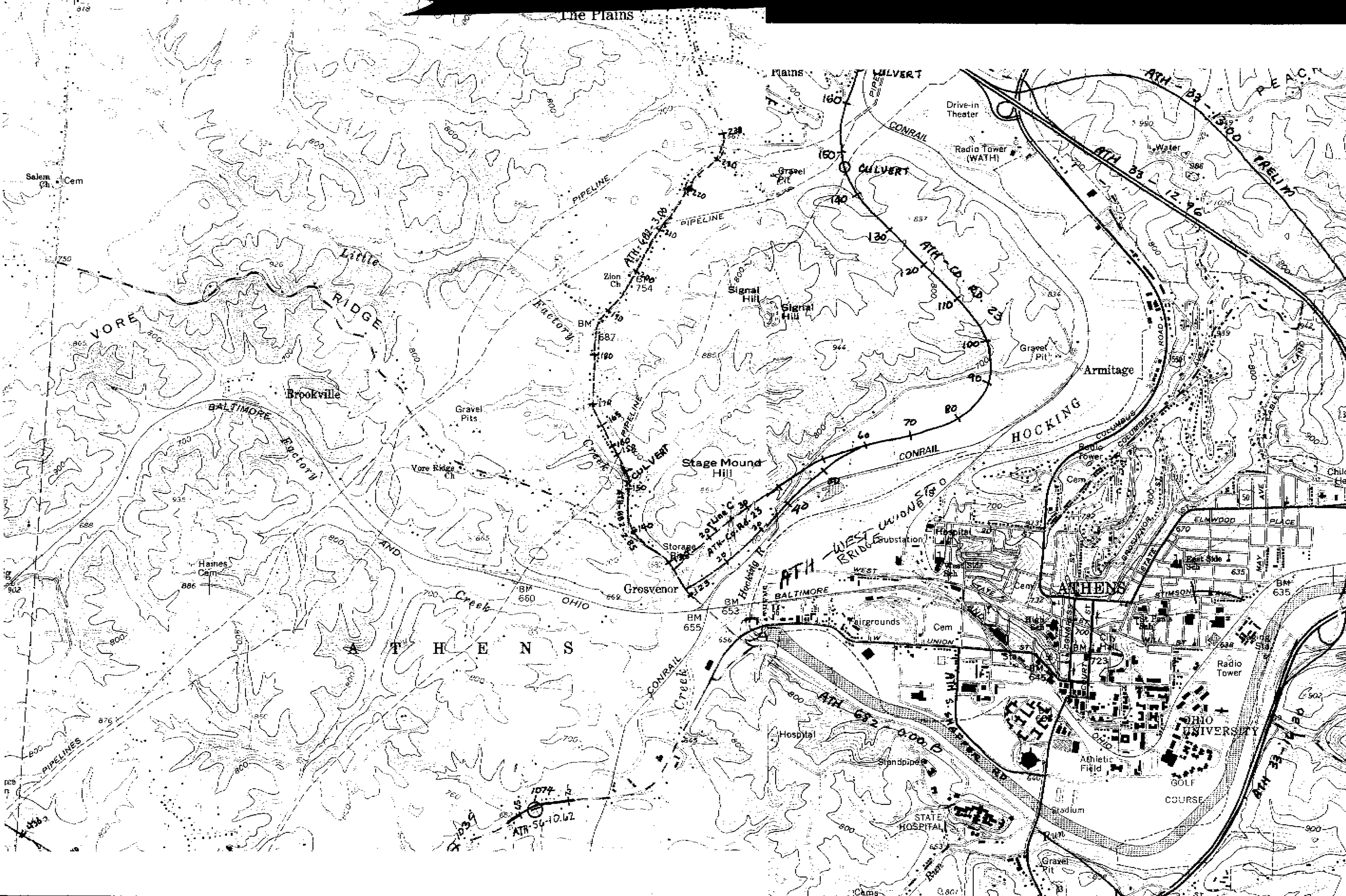
STATION & OFFSET 631+89, 23' Rt.

BORING NO. B-4 SURFACE ELEV. _____

TOTAL BORING DEPTH 45.0 TOP OF ROCK ELEV. _____

BORING TERMINATION ELEV. _____

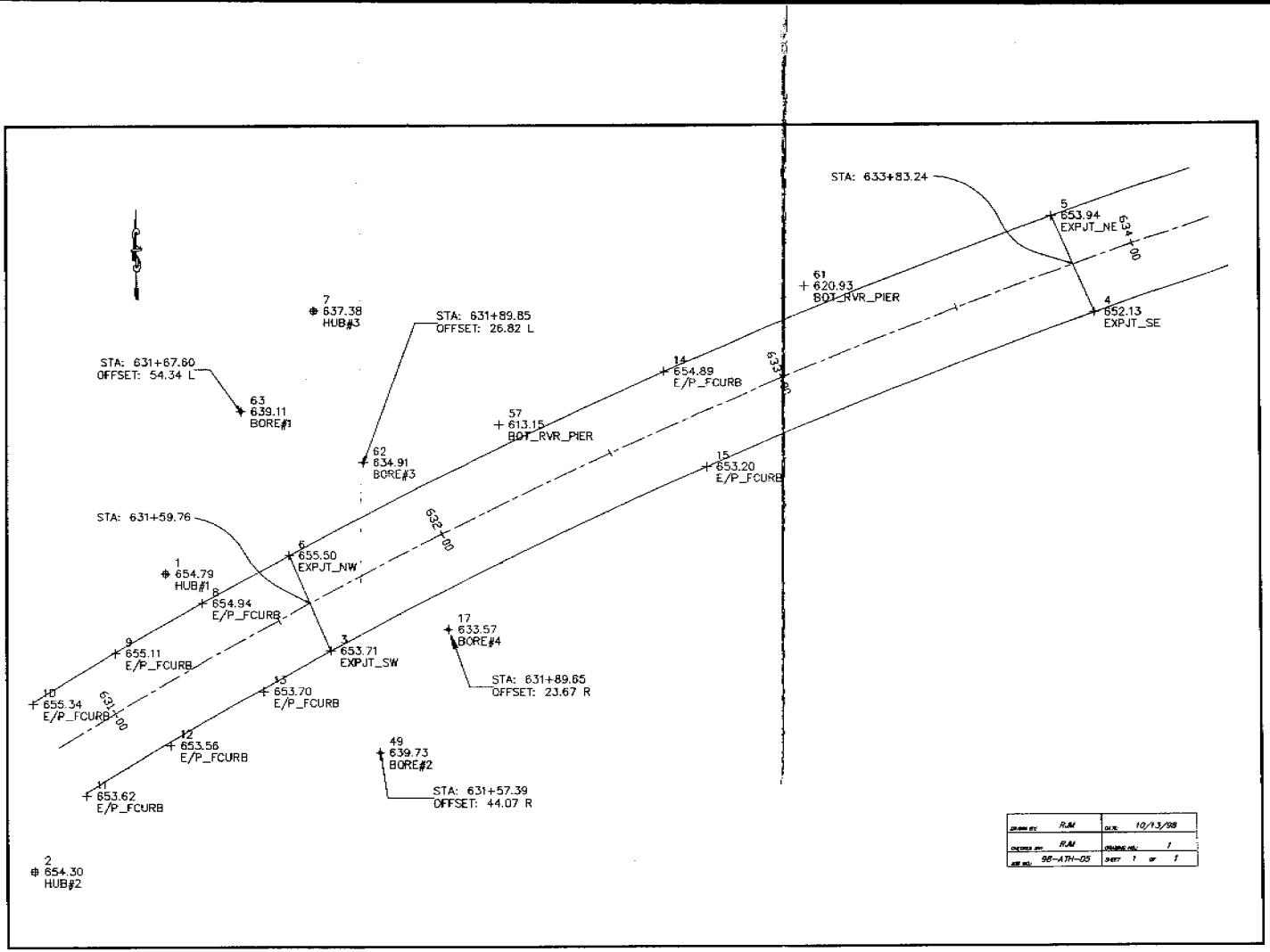
DEPTH	DESCRIPTION SOIL SAMPLES - /ROCK CORE	% CORE LOSS
33.0	TOP OF ROCK	
33.5	Drive Sample	
35.0	weathered clay-shale, dark olive, soft, carbonaceous, w. thin clay seams, slickensided, mostly jointed; w. a thick gray, hard, fine-grained sandstone seam at the top.	0%
36.3	Siltstone, black, firm, w. clay seams, jointed.	0%
38.4	shale, black, firm, carbonaceous, highly arenaceous, micaceous, w. scattered thin clay seams, jointed in a few places; interbedded w. scattered gray, hard, fine-grained, jointed sandstone intervals ranging up to 0.4' thick.	0%
45.0	BOTTOM OF BORING	


The Plains
Plains
CULVERT
160
150
CULVERT
140
130
120
110
100
90
80
70
60
ATH - CO. RD. 23
CONRAIL
Drive-in Theater
Radio Tower (WATH)
ATH - 33 - 13.00 PRELIM
ATH 33 - 12.96
PEACE
Water
950
986
1026
Salem Ch
Cem
750
Little
VORE
RIDGE
926
865
Brookville
BALTIMORE
Factory
AND
OHIO
Gravel Pit
PIPELINE
ATH - 682 - 3.00
230
210
220
210
Zion Ch
754
BM
687
190
180
170
165
160
158
CULVERT
150
140
ATH - 682 - 2.85
125
Gravel Pits
Vore Ridge Ch
Creek
Signal Hill
Signal Hill
944
885
657
834
Gravel Pit
Armitage
HOCKING
Stage Mound Hill
Storage Bins
Grosvenor
20 Line C 30
ATH - Co. Rd. 23
20
40
ATH WEST UNION ST
BRIDGE
Haines Cem
886
902
888
935
665
BM 660
669
BM 653
BM 655
656
Hocking R
A T H E N S
CONRAIL
Creek
PIPELINES
876
1074
1039
ATH - 56 - 10.62
Substation
Hospital
West Side Sch
WEST
STATE
Cem
Fairgrounds
Cem
UNION
Radio Tower
Cem
COLUMBUS
COLUMBUS
ROAD
ELMWOOD
PLACE
670
East Side Sch
635
ATHENS
STIMSON
AVE
MAY
BM 635
Children's Home
High Sch
City Hall
723
BM 645
St Paul's Sch
638
Radio Tower
OHIO UNIVERSITY
ATH 33 - 14.80
ATH 33
ATH 682 - 0.00
ATH 56 - SHAFER RD
Hospital
Standpipe
Athletic Field
GOLF
COURSE
Stadium
STATE HOSPITAL
Gravel Pit
Run
Cams
900
902
942
939
800
700

Ath-West Union St

Borings 1,2,3,4

Stations, offsets and elevations



SUMMARY OF SOIL TEST DATA

NOTE: NP SHOWN IN LIQUID LIMIT AND PLASTICITY INDEX COLUMNS INDICATES A NON-PLASTIC MATERIAL

LAB NO	DEPTH DIFF.	STATION & OFFSET	DEPTH FROM	DEPTH TO	% AGG	% CS	% FS	% SILT	% CLAY	LL	PI	% WC	ODOT CLASS	MST
93683		631+57, 44 Rt	02.50	04.00	0	1	19	43	37	33	11	22	A-6a	
93684	2.50		05.00	06.50	0	1	48	30	21	NP	NP	19	A-4a	
93685	2.50		07.50	09.00	0	2	51	28	19	NP	NP	20	A-4a K+	1
93686	2.50		10.00	11.50	0	0	30	39	31	NP	NP	39	A-4a wet	0
93687	2.50		12.50	14.00	0	0	38	34	28	NP	NP	40	A-4a wet	0
93688	2.50		15.00	16.50	0	0	28	41	31	NP	NP	32	A-4a wet	0
93689	2.50		17.50	19.00	0	0	18	39	43	35	16	42	A-6b wet	0
93690	5.00		20.00	21.50	0	1	54	22	23	NP	NP	31	A-4a wet	0
93691	5.00		25.00	26.50	0	6	44	22	28	25	8	41	A-4a	0
93692	5.00		30.00	31.50	27	44	22	3	4	NP	NP	30	A-1-b wet	0
93693	5.00		35.00	36.50	0	6	31	38	25	NP	NP	22	A-4a	*
93694	5.00		40.00	41.50	-	-	-	-	-	-	-	9		
			GRAY SOFT CLAY-SHALE										VISUAL	
93695	5.00		45.00	45.50	-	-	-	-	-	-	-	11		
			GRAY CLAY-SHALE W/SLICKENSIDES										VISUAL	
93696	0.50		50.00	50.50	-	-	-	-	-	-	-	9		
			GRAY FINE-GRAINED WEATHERED SANDSTONE										VISUAL	
93713		631+67, 54 Lt	02.50	04.00	0	2	19	41	38	NP	NP	12	A-4a	
93714	2.50		05.00	06.50	0	0	26	43	31	NP	NP	20	A-4a	*
93715	2.50		07.50	09.00	0	0	23	43	34	NP	NP	20	A-4a	*
93716	2.50		10.00	11.50	0	0	10	39	51	36	13	30	A-6a K+	
93717	2.50		12.50	14.00	0	0	6	39	55	32	9	32	A-4a	0
93718	2.50		15.00	16.50	0	0	13	42	45	29	10	36	A-4a	0
93719	2.50		17.50	19.00	0	0	7	41	52	32	10	34	A-4a	0
93720	5.00		20.00	21.50	0	0	14	36	50	29	9	38	A-4a	0
93721	5.00		25.00	26.50	0	1	40	26	33	33	16	41	A-6b	0
93722	5.00		30.00	31.50	30	14	25	18	13	NP	NP	24	A-2-4 K+	1
93723	5.00		35.00	36.50	0	1	88	4	7	NP	NP	26	A-3a wet	0
93724	5.00		40.00	41.50	0	1	21	44	34	26	8	22	A-4a K+	
93725	5.00		45.00	46.00	-	-	-	-	-	-	-	10		
			BLACK AND GRAY SOFT SLICKENSIDED CLAY-SHALE										VISUAL	
93726	0.50		50.00	50.50	-	-	-	-	-	-	-	4		
			BLACK ARENACEOUS HIGHLY WEATHERED SHALE										VISUAL	
93697		631+89, 26 Lt	02.50	04.00	0	0	15	42	43	NP	NP	22	A-4a	*
93698	2.50		05.00	06.50	0	2	19	39	40	34	11	32	A-6a	0
93699	1.50		07.50	09.00	0	1	16	42	41	34	11	33	A-6a	0
93700	1.50		09.00	10.50	-	-	-	-	-	-	-	34		
			BROWN SANDY SILTY CLAY										VISUAL	
93701	1.50		10.50	12.00	0	0	14	38	48	26	5	31	A-4a	0
93702	1.50		12.00	13.50	0	0	19	44	37	NP	NP	42	A-4a	0
93703	1.50		13.50	15.00	0	0	15	43	42	27	8	28	A-4a	0

93704	1.50		15.00-16.50	0	0	21	39	40	28	9	42	A-4a 0

LAB NO	DEPTH DIFF.	STATION & OFFSET	DEPTH FROM TO	% AGG	% CS	% FS	% SILT	% CLAY	LL	PI	% WC	ODOT CLASS	01 MST
93705	3.50		16.50-18.00	0	0	14	41	45	31	10	28	A-4a	0
93706	2.50		20.00-21.50	0	0	2	41	57	28	4	36	A-4a	0
93707	2.50		22.50-24.00	0	3	12	31	54	32	11	36	A-6a	0
93708	2.50		25.00-26.50	60	16	9	6	9	NP	NP	22	A-1-a wet	1
93709	2.50		27.50-29.00	49	29	12	5	5	NP	NP	21	A-1-b wet	1
93710	5.00		30.00-31.50	31	32	30	3	4	NP	NP	20	A-1-b wet	1
93711	5.00		35.00-36.50	0	40	53	1	6	NP	NP	28	A-3 wet	0
93712	1.00		40.00-41.00	-	-	-	-	-	-	-	9		
				GRAY W/BROWN SOFT ARENACEOUS CLAY-$HALE								VISUAL	
93669		631+89, 23 Rt	05.00-06.50	0	2	16	40	42	38	13	51	A-6a	0
93670	1.50		07.50-09.00	0	1	30	41	28	NP	NP	33	A-4a	0
93671	1.50		09.00-10.50	0	1	16	39	44	31	11	38	A-6a	0
93672	1.50		10.50-12.00	0	1	22	36	41	31	11	32	A-6a	0
93673	1.50		12.00-13.50	0	0	20	39	41	28	10	47	A-4a	0
93674	1.50		13.50-15.00	0	0	28	39	33	NP	NP	35	A-4a wet	0
93675	1.50		15.00-16.50	0	0	12	42	46	33	11	40	A-6a	0
93676	3.50		16.50-18.00	0	0	6	34	60	38	15	33	A-6a	
93677	2.50		20.00-21.50	0	0	3	37	60	35	11	38	A-6a	0
93678	2.50		22.50-24.00	0	0	3	34	63	38	12	39	A-6a	0
93679	2.50		25.00-26.50	58	21	12	5	4	NP	NP	15	A-1-a wet	
93680	2.50		27.50-29.00	51	19	16	7	7	NP	NP	15	A-1-a wet	
93681	3.50		30.00-31.50	-	-	-	-	-	-	-	12		
				GRAY AND BROWN SANDY SILT W/STONE FRAGMENTS								VISUAL	
93682	0.50		33.50-34.00	-	-	-	-	-	-	-	6		
				GRAY HIGHLY ARENACEOUS WEATHERED CLAY-SHALE								VISUAL	

LEGEND FOR PROJECT - AVERAGE RESULTS OF TESTS - 58 SAMPLES TESTED

ODOT CLASS	% AGG.	% C. SAND	% F. SAND	% SILT	% CLAY	LIQUID LIMIT	PLASTICITY INDEX	WATER CONTENT	SAMPLES TESTED
A-1-a(0)	56	19	12	6	7	NP	NP	17	3
A-1-b(0)	36	35	21	4	4	NP	NP	24	3
A-3(0)	0	40	53	1	6	NP	NP	28	1
A-3a(0)	0	1	88	4	7	NP	NP	26	1
A-2-4(0)	30	14	25	18	13	NP	NP	24	1
A-4a(7)	0	1	24	38	37	NP	NP	31	26
A-6a(8)	0	1	13	38	48	34	12	35	12
A-6b(8)	0	0	30	32	38	34	16	42	2
VISUAL									9